

# Most Patients Are Willing to Undergo Elective Endoscopic Procedures During the Reopening Period of the COVID-19 Pandemic

Short title: COVID-19: Patient Perspectives on Reopening

Douglas K. Rex, Krishna C. Vemulapalli, Meghan J. Kane, Lee McHenry, Jr., Stuart Sherman, Mohammad Al-Haddad

Division of Gastroenterology/Hepatology, Department of Medicine, Indiana University School of Medicine, Indianapolis, Indiana

Address correspondence to:

Douglas K Rex  
Indiana University Hospital 4100  
550 N University Blvd  
Indianapolis, Indiana 46202  
Email: [drex@iu.edu](mailto:drex@iu.edu)  
Phone: 317-948-8741

**Funding:** This work was supported by a gift to the Indiana University Foundation from Scott Schurz of Bloomington, Indiana and his children in the name of Douglas K. Rex.

**Author contributions:** DKR- study concept and design, drafting of the manuscript, study supervision; KCV- study concept and design, analysis and interpretation of data; statistical analysis, drafting and revision of manuscript; MJK- data acquisition, revision of manuscript; LM- study concept and design, revision of manuscript; SS- study concept and design, revision of manuscript; MA- study concept and design, revision of manuscript

**Disclosures:**

Douglas K. Rex:

Consultant: Olympus Corporation, Boston Scientific, Medtronic, Aries Pharmaceutical, Braintree Laboratories, Lumendi, Ltd., Norgine, Endokey, GI Supply, Covidien/Medtronic  
Research Support: EndoAid, Olympus Corporation, Medivators, Erbe USA Inc  
Ownership: Satisfai Health

Stuart Sherman:

Consultant: Olympus Corporation, Cook Medical, Boston Scientific

Mohammad A. Al-Haddad:

Funding and research support: Boston Scientific

Remaining authors disclose no conflicts

---

This is the author's manuscript of the article published in final edited form as:

Rex, D. K., Vemulapalli, K. C., Kane, M. J., McHenry Jr, L., Sherman, S., & Al-Haddad, M. (2020). Most Patients Are Willing to Undergo Elective Endoscopic Procedures During the Reopening Period of the COVID-19 Pandemic. *Gastroenterology*. <https://dx.doi.org/10.1053/j.gastro.2020.05.039>

## **Introduction**

As endoscopy units prepare to reopen for elective procedures, patient perceptions toward the risk of COVID-19 exposure from undergoing elective endoscopy are largely unknown. Therefore, we organized a survey of patients whose elective procedures scheduled in late March and April 2020 were canceled or rescheduled. To our knowledge, this is the first survey of this type.

## **Methods**

Indiana University Institutional Review Board approved the survey instrument (Supplementary Table 1) on April 10, 2020. Eligible patients were scheduled for elective outpatient procedures in March or April 2020 and were cancelled or rescheduled because of the pandemic. We excluded EUS and ERCP patients. “Elective” status was established by consensus among our endoscopists. The survey solicited perceptions in two main domains: 1) undergoing endoscopy during the pandemic with no effective treatment or vaccine available and 2) the impact of adopting new safety measures and staff COVID-19 testing on willingness to proceed. Stay-at-home orders were active in Indiana (only essential travel) during the survey period. Indiana announced elective procedures, including endoscopies, could resume on April 27, 2020<sup>1</sup>.

Six research assistants administered all surveys by telephone. The first and final surveys were conducted April 14 and 25, 2020, respectively.

### *Statistical analysis*

To calculate the mean value score for protective measures, we assigned score 0 to “no value”, 1 to “little value”, 2 to “important, should be done” and 3 to “critical”. When up to 3 protective

measures were ranked as most important for each patient, a score of 3 was assigned to the top measure, 2 for the second, and 1 if a third was ranked.

Chi-square and Fisher's exact test were used to compare patient responses regarding willingness to proceed and concern about acquiring COVID-19 infection. McNemar's test was used to compare proportions of patients willing to proceed with and without critical protective measures that patients deemed important. Significance was set at 0.05. All analyses were performed using SAS version 9.4 (SAS Institute, Charlotte, NC, USA).

#### *Sample size*

Assuming 70% were willing to undergo procedures without information on additional protective measures, a sample size of 230 had 80% power to show a 15% increase in willingness to proceed after being informed about additional protective measures with 30% discordant responses at 0.05 significance.

#### **Results**

We telephoned 578 patients and connected with 303. Of 303, 72 (23.8%) declined participation (no time, 14; not familiar with COVID-19, 2; did not want to answer a survey, 40; no reason provided, 16). Among the 72 who declined, mean age was 59.2 years  $\pm$  14.4 and 47.2% were female. There were 231 who agreed to participate (mean age, 58.9 years  $\pm$  14.3; 59% female;  $p = 0.094$  for gender difference from refusers). Among respondents, 153 (66%) were married, 84 (36%) had children at home, 17 (7%) had parents at home or were the caretakers of parents, and 194 (84%) were sheltering in place. Four patients reported current or previous symptoms

consistent with COVID-19, but none had been tested. The remaining 227 (98%) reported no symptoms and no testing.

The level of concern for acquiring COVID-19 by attending endoscopy was ranked “very” or “somewhat” by 102 patients (44%) (Supplementary Table 2). Patients without children at home were more often very or somewhat concerned compared to those with children at home (50% vs. 35%;  $p = 0.026$ ). Age, gender, and parents at home were not associated with level of concern.

When asked if willing to undergo their procedure in May 2020, 172 (75%) replied yes, 10 (4%) no, and 49 (21%) were unsure. Age, gender, or having parents or children at home were not associated with willingness to proceed. One hundred nine (47%) preferred a free-standing endoscopy unit, 45 (20%) preferred the hospital, and 77 (33%) had no preference. One hundred twenty-four (54%) responded staff should be tested for COVID-19 weekly, 45 (20%) daily, and 61 (27%) responded it doesn't matter.

Table 1 shows perceptions regarding specific protective measures. One measure was ranked important or critical by  $\geq 90\%$  of respondents: all endoscopy staff should wear a mask at all times. Three others were ranked critical or important by  $\geq 80\%$  of patients, including all staff who touch the patient wear gloves (86%), the patient is provided a mask while in the unit (84%), and staff are tested weekly for COVID-19 (82%). When respondents were asked to rank up to 3 most important measures, the highest scores were for: 1) all staff wear surgical masks, score 280; 2) patients are provided a mask, score 222; and 3) the staff are tested weekly for COVID-19, score 206. If all measures they considered critical were in place, 192 (83%, 95% CI: 77.7 to

87.7) responded they would proceed with their procedure, which was higher than the 172 (75%, 95% CI: 68.3 to 79.9) who would proceed before protective measures were presented (p = 0.002).

When asked how effective a treatment for COVID-19 should be to eliminate the need for protective measures considered critical, the most common response was it didn't matter, i.e. the measures should be in place regardless (35%), followed by 100% effective (27%), 75% effective (24%), 50% effective (8%) and 25% effective (4 %). Absent a 100% effective treatment or vaccine, 62% anticipated the need for long-term use of protective measures.

## **Discussion**

Only 4.3% of surveyed patients indicated they were unwilling to undergo elective endoscopy in May 2020, though another 22% were unsure. Thus, most patients were willing to undergo endoscopy despite 44% being very or somewhat concerned about acquiring COVID-19 by attending.

Patients expressed strong preferences about safety measures, and placed high value on staff wearing masks and gloves, on being provided a mask while in the endoscopy unit, and on weekly COVID-19 testing of staff. Having safety measures considered most important in place increased the fraction willing to present to elective endoscopy by 8%.

Study strengths include the sample size and high response rate (76.2%). Limitations include most subjects resided in Indiana, which could limit generalizability. The study surveyed patient perceptions, and may not reflect which actual behaviors patients will follow.

## Reference

1. State of Indiana. Executive Order 20-24: Resumption of elective and non-urgent medical procedures 2020. <https://www.in.gov/gov/2384.htm>. Accessed April 26, 2020.





Table 1. Proposed protective measures and patient perceptions of their value

Measure	No value Score = 0	Little value Score = 1	Important Score = 2	Critical Score =3	Mean*	Not sure/ don't know
Your driver is asked to drop you off and not enter the building	42 (18.3)	63 (27.4)	59 (25.7)	39 (17)	1.5	27 (11.6)
Your driver is allowed to enter the building and is asked to stay in a single person cubicle in the waiting room that is protected and cleaned with disinfectant after each use	21 (9.1)	51 (22.1)	99 (42.9)	48 (20.8)	1.8	12 (5.2)
You are provided with a surgical mask as soon as you reach registration and wear it for your entire stay	13 (5.7)	16 (7)	92 (40)	102 (44.3)	2.3	7 (3)
All staff wear surgical masks at all times during your stay	6 (2.6)	8 (3.5)	84 (36.4)	130 (56.3)	2.5	3 (1.3)
All staff who touch you are wearing gloves	8 (3.5)	16 (6.9)	87 (37.7)	112 (48.5)	2.4	8 (3.5)
All staff while wearing gloves and masks stay at least 6 feet from you except when required	21 (9.1)	52 (22.5)	87 (37.5)	63 (27.3)	1.9	8 (3.5)
You receive a COVID-19 rapid test (15 min) on entry into the endoscopy unit	18 (7.8)	41 (17.7)	86 (37.2)	66 (28.6)	1.9	20 (8.6)
All staff are tested daily for COVID-19 infection	28 (12.1)	60 (25.9)	61 (26.3)	53 (22.8)	1.7	27 (11.8)
All staff are tested weekly for COVID-19 infection	10 (4.4)	20 (8.8)	93 (40.1)	95 (40.9)	2.3	10 (4.4)

- Mean scores do not include responses of “not sure” and “don't know”

Supplementary Table 1.

**Survey of endoscopy patients – willingness to undergo procedures after COVID-19**

Hi, this is \_\_\_\_\_. I'm a research assistant with Dr. Rex in the Division of Gastroenterology at Indiana University. I'm calling to see if you would be able to answer a short survey on your willingness to undergo your previously scheduled endoscopic procedure after the current corona virus shutdown period is over. This survey is a research study being conducted by Dr Rex. It was not commissioned by IU or the endoscopy center. The information learned from the survey is for research only, and should not be expected to influence or determine patient care or your experience when you travel to the endoscopy center.

*Pause for response*

This survey is about measures that could be taken at the endoscopy units to increase your confidence about the safety of undergoing your procedure from the perspective of being exposed to the corona virus. How effective any particular measure will be and whether it will be available in the next few months is currently unknown. The actual measures that will be taken at the time that you undergo the procedure are under ongoing review.

You are under no obligation to participate in this survey, and refusing to participate will not affect your care at Indiana University in any way. If you participate, your identity will be confidential and will not be made known to the doctors reviewing the results of the survey. We expect that approximately 500 patients who have had their procedures delayed will be called to participate in this survey. The survey is expected to take 5-10 minutes to complete. Are you willing to help us by participating in this survey?

*Pause for response*

1. Your age \_\_\_\_\_
2. Your gender \_\_\_\_\_
3. Are you married or living with a significant other?
  - a. Yes \_\_\_\_\_
  - b. No \_\_\_\_\_
4. Do you have children at home?
  - a. Yes \_\_\_\_\_
  - b. No \_\_\_\_\_
5. Do you have parents (either yours or your significant other's) living with you at home?
  - a. Yes \_\_\_\_\_
  - b. No \_\_\_\_\_
6. Have you been working at home or sheltering in place during the COVID-19 outbreak?
  - a. Yes \_\_\_\_\_
  - b. No \_\_\_\_\_

7. Have you previously been confirmed to have COVID-19?
  - a. Yes \_\_\_\_\_
  - b. No \_\_\_\_\_
  - c. Maybe – I had some symptoms but was not tested \_\_\_\_\_
  
8. Are you willing to proceed with your procedure if scheduled in May 2020?
  - a. Yes \_\_\_\_\_
  - b. No \_\_\_\_\_
  - c. Not sure \_\_\_\_\_
  
9. Please rate your level of concern about having the procedure in May 2020 with regard to the risk of acquiring the COVID-19 infection?
  - a. Very concerned \_\_\_\_\_
  - b. Somewhat concerned \_\_\_\_\_
  - c. Neutral \_\_\_\_\_
  - d. Only a little concerned \_\_\_\_\_
  - e. Not at all concerned \_\_\_\_\_
  
10. If you have your procedure in May 2020, which of the following sites would you prefer?
  - a. Free standing endoscopy unit not associated with the hospital \_\_\_\_\_
  - b. Endoscopy unit located in the hospital \_\_\_\_\_
  - c. No preference \_\_\_\_\_
  
11. How frequently do you feel all staff should be tested for COVID-19?
  - a. Daily \_\_\_\_\_
  - b. Weekly \_\_\_\_\_
  - c. Doesn't matter \_\_\_\_\_

I'm now going to read to you a list of protective measures that are under review to increase your safety. For this section you should assume that we are past the peak of the infection but it is still around and there is some risk of acquiring it from going out into public. In addition you should assume that no effective treatment for active infection has become widely available. Also assume that no vaccine is available. After I read each measure, I'll ask you to rate it according to how valuable or important you perceive the measure to be in making you confident about the safety of having your procedure and not being exposed to coronavirus. The lowest rating is that this measure has "no value" from your perspective – meaning it doesn't increase your confidence at all, the next rating is "a little value", then the next rating is "important- this measure should be in place at the endoscopy unit", and the highest rating is "critical for my confidence in undergoing the procedure." Finally, if you aren't sure or don't know what the measure is you can rate it you are "not sure or don't know".

12. How would you rate the value of each of the following measures in reducing your concern about having your procedure in May 2020?

Factor	No value	A little value	Important – should be done	Critical for your confidence	Not sure or don't know	Ranking

Your driver is asked to drop you off and not enter the building						
Your driver is allowed to enter the building and is asked to stay in a single person cubicle in the waiting room that is protected and cleaned with disinfectant after each use						
You are provided with a surgical mask as soon as you reach registration and wear it for your entire stay						
All staff wear surgical masks at all times during your stay						
All staff who touch you are wearing gloves						
All staff while wearing gloves and masks stay at least 6 feet from you except when required						
You receive a COVID-19 rapid test (15 min) on entry into the endoscopy unit						
All staff are tested daily for COVID-19 infection						
All staff are tested weekly for COVID-19 infection						

Next, I'm going to read the measures back to you. I'd like you to select up to 3 measures in the order of their importance that you consider would be the most reassuring to you and your safety in undergoing an endoscopic procedure while cases of COVID-19 continue. Are you ready?

13. If all of your top ranked safety features are in operation when you present would you feel comfortable proceeding

- a. Yes \_\_\_\_\_
- b. No \_\_\_\_\_
- c. Not sure \_\_\_\_\_

For the next question please assume that a safe treatment for active COVID-19 infection has become widely available.

14. How effective would the new treatment have to be in reducing mortality (death) for you to feel that the steps you considered critical or important for your protection are no longer necessary?

- a. 25% effective \_\_\_\_\_
- b. 50% effective \_\_\_\_\_

- c. 75% effective\_\_\_\_\_
  - d. 100% effective\_\_\_\_\_
  - e. It doesn't matter – I still want these steps in place before I get my procedure because I don't want to get COVID-19 infection
15. In the absence of a 100% effective treatment or a vaccine, would you advocate the above protective measures become permanent for all patients undergoing endoscopy?
- a. Yes
  - b. No
  - c. Not sure

Thank you for participating in this research study. Please understand that discussion of these measures does not imply that they effective or necessary. Further the results of the survey should not be expected to determine patient care at the endoscopy center. Actual policies to be utilized are the subject of current intense evaluation at the endoscopy center. Thank you!

Supplementary Table 2. Level of concern about acquiring COVID-19 from undergoing endoscopy in May 2020

Level of concern before presentation of safety measures	N (%)
Very concerned	36 (15.6)
Somewhat concerned	66 (28.6)
Neutral	25 (10.8)
Only a little concerned	62 (26.8)
Not at all concerned	42 (18.2)