

A survey of patient acceptance of resect and discard for diminutive polyps

Douglas K. Rex, M.D.¹

Nedhi J. Patel, B.S., M.S.²

Krishna C. Vemulapalli, M.B.B.S., M.P.H.¹

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

Address correspondence and reprint requests to:

Douglas K. Rex
University Hospital
550 N. University Blvd., Suite 4100
Indianapolis, IN 46202
Phone: (317) 948-8741
Fax: (317) 944-5449

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4 Abstract
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9 Background and Aims: Resect and discard is a new paradigm for management of diminutive
10 colon polyps. Little is known regarding whether patients would accept resect and discard. We
11 surveyed colonoscopy patients and their drivers regarding acceptance of resect and discard.
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19 Methods: This was a cross-sectional survey of colonoscopy outpatients and their drivers at 2
20 outpatient academic endoscopy centers.
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26 Results: Four hundred fifteen colonoscopy patients and 293 drivers completed the survey
27 (93.5% of all invited subjects). Results for the 2 groups were similar. Overall, 66.3% indicated
28 they would accept resect and discard. Subjects who were younger, white, and seen at the
29 ambulatory surgery center (vs the hospital outpatient department) were more likely to accept.
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31 Those declining resect and discard were more likely to be willing to pay some amount out-of-
32 pocket to have diminutive polyps checked by pathology (97.1% vs 44.5%). Of those unwilling
33 to accept resect and discard, 49.8% would require a zero chance of cancer in diminutive polyps
34 before accepting resect and discard.
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48 Conclusions: Patient acceptance of resect and discard appears promising but is quite variable.
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50 Eliciting individual patient acceptance of resect and discard will be important during initial
51 implementation into clinical practice.
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4 Introduction
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9 "Resect and discard" is a new paradigm for management of diminutive colon polyps in which the
10 pathology of polyps is first estimated using endoscopic criteria, and then polyps interpreted as
11 conventional adenomas versus belonging to the serrated class (hyperplastic polyps or sessile
12 serrated polyps) are resected and discarded without pathologic assessment ^{1,2}.
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21 Resect and discard has been estimated to be a cost-effective management paradigm for
22 diminutive polyps ^{3,4}. Several tools for endoscopic determination of colon polyp pathology,
23 including narrowband imaging, confocal laser microscopy, Fujinon intelligent
24 chromoendoscopy, and Pentax i-SCAN have been shown to provide adequate accuracy in real-
25 time determination of pathology to support the resect and discard paradigm ^{5,6}.
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36 In order for resect and discard to enter clinical practice, the paradigm would first need
37 endorsement as a standard of care by professional societies ⁷, and acceptance in local
38 institutional policies.
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45 Though potential strategies for implementation of a resect and discard paradigm have been
46 outlined, the reaction of patients to the use of resect and discard has not been examined. In this
47 study we report a survey of 708 patients and potential patients (drivers and other individuals
48 accompanying patients) to our endoscopy unit regarding their attitudes toward the resect and
49 discard paradigm.
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7 Methods
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11 Research coordinators approached colonoscopy outpatients in our endoscopy units, and/or their
12 driver or other accompanying adult. Potential subjects were included on a consecutive basis if
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14 there was a coordinator available to invite participation, if they were age 18 years or older, and if
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16 they spoke fluent English. Surveys were performed in the assessment area of the endoscopy
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18 unit. The survey was completed between May and September 2014. The patient's drivers or
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20 family members were variably with the patient in the assessment area and available for
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22 invitation. If not in the assessment area, these individuals were not approached in the endoscopy
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24 unit waiting room for participation. Demographic information was collected on age, gender,
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26 race, numbers of prior colonoscopies, whether or not polyps had been removed during previous
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28 colonoscopies, and the number of years of education completed (appendix A). Survey subjects
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30 were then asked to read a short series of paragraphs on the resect and discard concept (appendix
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32 A), including information on the prevalence of cancer in polyps of different sizes. They were
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34 then asked to check whether they would be willing to have tiny polyps thrown away, or
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36 unwilling (appendix A); how much they would be willing to pay per tiny polyp removed to have
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38 it checked by a pathologist provided they had to make the payment themselves; and finally, for
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40 those who were unwilling to have tiny polyps discarded, they were asked to designate what
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42 chance of cancer in a polyp would be necessary before they would be willing to have tiny polyps
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44 discarded (appendix A).
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4 Statistical analysis
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9 Assuming that 50% of people would say yes to resect and discard, 384 patient participants were
10 needed to estimate the prevalence of persons willing to accept resect and discard with a 5%
11 margin and a 95% confidence interval. Drivers and other attendees were also invited to
12 participate but were not counted toward the sample size goal to make certain there was sufficient
13 participation by actual colonoscopy patients. Differences among the groups were analyzed using
14 chi-square tests for categorical variables and independent samples t-tests for continuous
15 variables. Statistical significance was set at 0.05. We performed a logistic regression on the
16 willingness to accept resect and discard using the variables that were significantly different in
17 univariate analyses when comparing the groups responding yes versus no to resect and discard.
18 We used Hosmer-Lemeshow goodness-of-fit to test for the regression model. Among those
19 willing to pay for pathology, the 2 groups responding yes versus no to resect and discard were
20 compared using Wilcoxon-Mann-Whitney non-parametric test for differences in payment
21 amount. All analyses were performed on SPSS Version 22 (IBM, NY).
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45 Results
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50 There were 442 colonoscopy patients aged ≥ 18 years approached to complete the survey. Of
51 these, 16 refused, 8 did not speak fluent English, and 3 were considered by the research
52 coordinator unable to comprehend the survey. There were 315 drivers approached, of whom 12
53 refused, 9 did not speak fluent English, and one was considered unable to comprehend the
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4 survey. Thus, 708 of 757 (93.5%) persons approached completed the survey. Subjects who
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6 completed the survey included 415 colonoscopy patients and 293 drivers. Table 1 shows several
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8 features of the patients and drivers. There was no difference between patients and drivers with
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10 regard to their preferences for resect and discard (Table 1) and other survey results, so the results
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12 for patients and drivers were combined.
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19 The mean age of all surveyed subjects was 54.9 years, 41% were male, 91.8% underwent
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21 colonoscopy at the outpatient hospital department and only 8.2% at the ambulatory surgery
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23 center, 84.9% were white, 1.5% Hispanic, and most of the remaining subjects were black. Of all
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25 participating subjects, 500 (70.4%) had a prior colonoscopy, and of these 281 (56.2%) had prior
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27 polyps. The mean number of years of education was 14.8.
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33 Of all 708 survey subjects, 471 (66.3%) expressed a willingness to have polyps ≤ 5 mm in size
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35 discarded.
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40 Table 2 shows univariate analyses comparing the 471 subjects willing to have polyps discarded
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42 and the 239 subjects who were unwilling. In univariate analyses, those willing to participate in
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44 resect and discard were younger, more likely to be seen at the ambulatory surgery center, to be
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46 white, and to have never had colonoscopy (Table 2). Multivariate analysis demonstrated that
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48 being seen at the ambulatory surgery center ($p < 0.001$), younger age ($p = 0.009$) and white race
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50 ($p = 0.027$) were associated with acceptance of resect and discard, but absence of a prior
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52 colonoscopy was not ($p = 0.34$).
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4 There were a total of 440 subjects who said they were willing to pay some amount for pathologic
5 assessment of their polyps (Table 3). Those who said they would accept resect and discard were
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7 less likely to be willing to pay some amount for pathology compared with those unwilling to
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9 accept resect and discard (44.5% vs 97.1%; $p < 0.001$). There were 139 persons who checked
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11 amounts $< \$100$ as what they would be willing to pay, 161 checked \$100 (the single-most
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13 commonly quoted amount), 68 checked amounts from \$200 to \$400, and 82 checked amounts
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15 $\geq \$500$. The amounts checked by those unwilling to accept resect and discard were larger than
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17 those checked by the group willing to accept resect and discard ($p < 0.001$; Table 3).
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29 Among the 239 individuals who said they were unwilling to permit discarding polyps, most of
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31 the individuals wanted an extremely low risk of cancer before they would be willing to discard
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33 polyps, and 49.8% said there would be need to be a zero chance of cancer before they would
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35 agree to discarding polyps (Table 4).
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43 Discussion

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45 In this study, we reported a survey of willingness of colonoscopy patients and their drivers
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47 (typically family members or friends) to participate in a resect and discard policy for diminutive
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49 polyps. Strengths of the study include the high response rate produced by the in-person
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51 administration of the survey, and the large number of subjects surveyed.
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4 The results show a wide range of patient perceptions of resect and discard. A majority of
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6 subjects (66%) was willing to have polyps ≤ 5 mm in size discarded, given the risk of cancer of
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8 less than 1 in 1,000. Evidence indicates that the risk of cancer is indeed well below 1 in 1000 in
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10 diminutive polyps⁸⁻²⁰. Thus, the survey suggests that many patients would accept resect and
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12 discard. However, the survey also indicates that patient input should be elicited regarding the
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14 resect and discard before implementation because a minority of patients (1/3) were opposed to
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16 resect and discard, and half of these subjects (or 1/6 of the total survey population) said they
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18 would want a zero chance of cancer before agreeing to resect and discard.
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26 Thus, our results suggest that in the initial phases of a resect and discard clinical practice, it will
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28 be best to solicit each individual patient's attitudes and perceptions regarding resect and discard
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30 before proceeding to the resect and discard paradigm in that particular patient. Obviously,
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32 patient perception and willingness to participate could be expected to change in one direction or
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34 another as the success of resect and discard in actual clinical practice is clarified.
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41 Limitations of this survey are several, including that as a survey it may not represent what
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43 patients would actually decide once resect and discard is instituted. Second, the study population
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45 may not be representative of many local or regional populations with regard to factors such as
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47 race and socioeconomic status. Third, the assumptions provided in the survey may not be
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49 accurate, though available evidence⁸⁻²⁰ indicates that the risk of cancer in diminutive polyps is
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51 well below 1 per 1000.
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4 In summary, our survey indicates that a majority of patients, provided with information that the
5 risk of cancer in polyps ≤ 5 mm in size is less than 1 per 1000, would be willing to have those
6 polyps discarded without submission to pathology. However, the range of perceptions is wide,
7 and a minority of patients at the present time would prefer submission of diminutive polyps to
8 pathology, and about 1 in 6 survey subjects indicated they would need to know that the risk of
9 cancer was zero in diminutive polyps before they would be willing to have diminutive polyps
10 discarded after resection. Thus, in the initial phases of a resect and discard practice, it will be
11 best to solicit information on patient perceptions before deciding whether resect and discard is
12 appropriate for an individual patient. Our survey indicates that additional attention to patient
13 attitudes and education of patients on the rationale for resect and discard will be necessary as the
14 paradigm is introduced into clinical practice. This requirement is one of several issues that must
15 be addressed as the resect and discard paradigm moves forward ²¹.
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4 Appendix A.
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7 **Resect and Discard Survey**
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10 This survey is about your opinion on a policy called “resect and discard” which is about the
11 handling of very small colon polyps after they are removed during colonoscopy. We appreciate
12 your time in completing this survey.
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15 Age _____ Male / Female

16 Hispanic or Non-Hispanic

17 White _____ African American _____ Asian _____ Other _____
18

19 How many colonoscopies have you had before today? _____
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21 Did you have polyps on any previous colonoscopy? Yes _____ No _____ N/A _____
22

23 What year did you complete in school? _____
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27 Here is some preliminary information about colon polyps:
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30 Rarely, a polyp already has cancer in it. This can be important to know because a polyp with
31 cancer may need a follow-up surgery to get the bowel and lymph nodes out. The chance of
32 cancer is related to the size of the polyp as follows
33

| 34 Size | 35 Chance of cancer |
|---|----------------------------|
| 36 10 mm (about one-third inch) or larger | 37 1 in 100 |
| 38 6-9 mm (1/4 to 1/3 of inch) | 39 1 in 500 |
| 40 5 mm (about 1/4 inch) or less | 41 less than 1 in 1,000 |

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43 Some polyps can turn into cancer and some can't. If a polyp has the ability to become cancer in
44 the future it's called “pre-cancerous.” Using modern colonoscopes, doctors can tell which are
45 pre-cancerous just by looking at them (accuracy is the same as the pathologist). The only issue
46 affected by whether a polyp is pre-cancerous is when the next colonoscopy should be performed.
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49 In a proposed new policy your colonoscopy doctor could examine polyps that are 5 mm or
50 smaller in size and determine by their appearance whether they are pre-cancerous or not. These
51 polyps 5 mm and smaller would then be removed and discarded without being sent to the
52 pathologist. Polyps larger than 5 mm would still be sent to the pathologist for analysis.
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55 Discarding the tiny polyps after removing them would save significant costs, notably supplies
56 and pathology fees.
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5 We would like to know how you would feel about this policy. Please check which conclusion
6 describes your reaction best. (Choose between # 1 and #2)
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- 9 1. Throwing away tiny polyps (with less than 1 in 1,000 chance of _____
10 cancer) after removing them is a good idea. It's a good way to
11 reduce health care costs and I'm OK with it for my colon polyps.
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13 2. This is a bad idea. I want my tiny polyps checked by a pathologist. _____
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16 Suppose you have to pay for the pathology charges yourself (not your insurance company). Is
17 there a price you'd be willing to pay per tiny polyp removed to have them checked by the
18 pathologist? Please circle the highest charge you'd be willing to pay:
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- 21 \$25
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23 \$50
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25 \$100
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27 \$200
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29 \$400
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31 \$500
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33 \$1,000
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35 \$2,000
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37 \$3,000
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39 \$4,000
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41 \$5,000
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43 More than \$5,000

44 Other amount you'd be willing to pay _____

45 If you choose number 2, what would be the chance of cancer in a polyp have to be before you'd
46 be willing to have it thrown away and not sent to pathologist?
47

- 48 1. Less than 1 in 2,000 _____
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50 2. Less than 1 in 5,000 _____
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52 3. Less than 1 in 10,000 _____
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56 5. Less than 1 in 50,000 _____
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58 6. Less than 1 in 100,000 _____
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60 7. Zero chance of cancer _____
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Table 1. Comparison of the colonoscopy patients and their driver (typically a family member or friend)

| | Patient (n=415) | Driver (n=293) | p-value |
|---|------------------------|-----------------------|---------|
| Age (years) | 55.9 (15.2) | 53.9 (13.8) | 0.065 |
| Male sex | 202 (48.7) | 88 (30) | <0.001 |
| Hospital outpatient department vs the ambulatory surgery center | 373 (89.9) | 277 (94.5) | 0.026 |
| Willing to accept the resect and discard paradigm | 279 (67.2) | 191 (65.2) | 0.57 |
| White (vs non-white) | 349 (84.1) | 254 (86.7) | 0.339 |
| Hispanic (vs non-Hispanic) | 7 (1.7) | 4 (1.4) | 0.733 |
| Any prior colonoscopy | 321 (77.3) | 179 (61.1) | <0.001 |
| Any prior polyps† | 209/321 (65.1) | 72/179 (40.2) | <0.001 |
| Education years* | 14.8 (3) | 14.9 (2.7) | 0.82 |
| Willing to pay any amount for pathology | 259 (62.4) | 181 (61.8) | 0.864 |

†among 500 participants with prior colonoscopy

*one patient refused to indicate years of schooling

Table 2. Comparison between survey subjects who were willing versus unwilling to accept a resect and discard paradigm

| | Yes to resect and discard (n=470) | No to resect and discard (n=238) | p-value |
|---|--|---|---------|
| Age | 53.9 (14.8) | 57.4 (14.2) | 0.003 |
| Male sex | 203 (43.2) | 87 (36.6) | 0.09 |
| Seen at hospital outpatient department (vs the ambulatory surgery center) | 417 (88.7) | 233 (97.9) | <0.01 |
| Patient (vs driver) | 279 (59.4) | 136 (57.1) | 0.57 |
| White (vs non-white) | 412 (87.7) | 191 (80.3) | 0.01 |
| Hispanic (vs non-Hispanic) | 8 (1.7) | 3 (1.3) | 0.65 |
| Any prior colonoscopy | 320 (68.1) | 180 (75.6) | 0.04 |
| Any prior polyps† | 176/320 (55) | 105/180 (58.3) | 0.47 |
| Education years* | 15 (2.9) | 14.6 (2.8) | 0.09 |

†among 500 participants with prior colonoscopy

*one patient refused to indicate years of schooling

Table 3. Among 440 patients who were willing to pay something for pathology, the amounts cited by the patients

| Dollar amounts subjects were willing to pay | Yes to resect and discard (n=209) | No to resect and discard (n=231) |
|---|-----------------------------------|----------------------------------|
| 5 | 1 (0.5) | 0 |
| 10 | 5 (2.4) | 2 (0.9) |
| 25 | 52 (24.9) | 17 (7.4) |
| 50 | 38 (18.2) | 24 (10.4) |
| 100 | 74 (35.4) | 87 (37.7) |
| 200 | 18 (8.6) | 32 (13.9) |
| 250 | 3 (1.4) | 0 |
| 400 | 0 | 5 (2.2) |
| 500 | 10 (4.8) | 43 (18.6) |
| 1000 | 4 (1.9) | 10 (4.3) |
| 2000 | 0 | 1 (0.4) |
| 4000 | 0 | 1 (0.4) |
| 5000 | 3 (1.4) | 3 (1.3) |
| >5000 | 1 (0.5) | 6 (2.6) |

Wilcoxon-Mann-Whitney mean rank for yes group: 176, mean rank for no group: 250, medians for both groups: 100, p<0.001

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4 Table 4. Among those who said “no” to the resect and discard paradigm, the risk of cancer in
5 diminutive polyps they would require before agreeing to a resect and discard paradigm
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| 8 9 10 11 12 Required cancer risk in diminutive polyps to make resect and discard acceptable | Frequency | Percent |
|---|-----------|---------|
| 13 <1in2000 | 9 | 3.8 |
| 14 <1in5000 | 19 | 7.9 |
| 15 <1in10000 | 18 | 7.5 |
| 16 <1in20000 | 5 | 2.1 |
| 17 <1in50000 | 14 | 5.9 |
| 18 <1in100000 | 55 | 23.0 |
| 19 Zero chance | 119 | 49.8 |

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