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**Colonic Polyp Detection Rates:
A Comparative Study of High-Definition Colonoscopic Screening
Versus Traditional Definition Colonoscopic Screening**

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High definition colonoscopes were introduced with the idea that this technology would increase polyp detection rates. There is little data available, however, to support this claim. A retrospective study was undertaken to compare polyp detection rates and adenoma detection rates prior to the introduction of high definition colonoscopic technology versus those same rates using high definition colonoscopes. Patient criteria for the study included patients over the age of 50 who had been seen for screening colonoscopy and were asymptomatic. The patients' charts were retrospectively reviewed, noting the patient's age, gender, number of polyps detected, and the number of adenomas detected.

The colonoscopes used in these studies involved the Olympus 160 series as opposed to the Olympus high definition 180 series. Colonoscopies were performed by staff gastroenterologists with practice experience varying from 15 years to 30 years.

Over 1,000 charts met the criteria for the study. The first group included those whose colonoscopies were performed with traditional definition equipment. There were 325 patients in this group, who had colonoscopy screening from July of 2005 through June 2006. The second group included 706 patients, who underwent colonoscopy screening from August of 2007 to July of 2008 with high definition equipment. The 12 months from July of 2006 through July of 2007 were not used in this study as it represented a period of time when the Center was undergoing transition to high definition equipment and had a mixture of both 160 series and HD 180 series Olympus colonoscopes. As of August 2007, all screening colonoscopies were carried out with high definition equipment. To insure accuracy of counts and statistics, data was collected and validated by three different reviewers.

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Results of collected data are compared in the following graphic:

	Total # of Screenings	Total # of Polyps	Total # of Adenomas	Total Male Screening	Total Female Screening	Total Males With Polyps	Total Females With Polyps	Total Males with Adenomas	Total Females With Adenomas
2005-2006	325	138	80	179	146	86	52	56	24
		42.86%	24%			48%	35.6%	31.3%	16.4%
2007-2008	706	423	276	369	337	242	181	166	110
		59.96%	39%			65.6%	53.7%	45%	32.6%

These results revealed a 39.9% increase in total polyps detected in the data collected after implementation of high definition technology (42.86% versus 59.96%). An increase of 62.5% in the adenoma detection rate (24% versus 39%) was also revealed. These findings can be benchmarked with reference material published by the American Society of Gastrointestinal Endoscopy and the American College of Gastroenterology in Gastrointestinal Endoscopy, where the accepted parameters prior to high definition technology for adenoma detection read: "Among healthy asymptomatic patients undergoing screening colonoscopy, adenomas should be detected in $\geq 25\%$ of men and $\geq 15\%$ of women more than 50 years old". (3:S21):

Two additional variables, namely colon preparation and the colonoscope field of vision range, were considered as possibly playing a role in the increased rate of polyp and adenoma detection. Review of the charts in regard to prep revealed no significant difference in the quality of preps between groups. Likewise, there were no significant changes in the manner of patient preparation for colonoscopy in the intervals studied. The other possible variable considered involved the field of vision in the series of colonoscopes being used. The Olympus 160 series colonoscopes used in this Center had a 140-degree field of vision. The 180 series of high definition colonoscopes used in the 2007 through 2008 period studied have a 170-degree field of vision. It has been suggested by a few studies that an increase in polyp detection rate may be attributed to the larger field of vision in the 180 series high definition scopes, (4:310) while others report that with the use of wide angle technology "no statistically significant difference was detected in the overall detection of polyps or in the ratio of flat or small adenomas." (5:1065) Considering the dramatic numbers revealed by this study, it is unlikely that any field of vision increase alone would account for the increased detection rate noted here. It is felt that the high definition technology is primarily and directly responsible for the increased polyp and adenoma detection rates reported.

A proposed follow-up study will include selecting patients who received a screening colonoscopy prior to the availability of high definition equipment and were reported as having normal exams. These patients would be rescreened using high definition technology to determine if this repeat colonoscopy will detect flat lesions that were more likely to be missed with traditional definition examination. Flat polyps are associated with sessile, serrated lesions, which have shorter polyp-to-cancer sequence. There is concern that the accepted practice of 10-year intervals between normal colonoscopy examinations in this patient population may not be appropriate given the aforementioned data.

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