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## Aim:

To present a review of the sampled colonoscopy waitlist at Hawkes Bay Fallen Soldier's Memorial hospital under previous and updated surveillance guidelines. The primary outcome was to assess the impact that updated polyp surveillance guidelines would have on service demand while secondary outcomes were to establish a snapshot of indications for service demand and quality of investigation to allow for service strategic planning.

## Background:

In New Zealand, colorectal cancer is the most common malignancy in men and 2<sup>nd</sup> most common in women with 3189 total new diagnoses in 2018 (1). Maori are less likely to be diagnosed but more commonly at a younger age (2) than non-Maori. Despite this there are no significant differences in mortality (3).

The adenoma-carcinoma sequence is a well established explanation about the origin and development of colonic malignancies (4).

In 2011, the Ministry of Health initiated a pilot programme for bowel cancer screening at Waitemata District Health Board (5). The aim of colonoscopic surveillance is to detect adenomas that would eventually undergo malignant transformation and guidelines were established regarding the appropriate surveillance intervals (6). These were surmised on National Institute for Health and Clinical Excellence recommendations, in turn based on low to moderate quality evidence (7). In September 2020, the Cancer Control Agency released an update on polyp surveillance guidelines to align with recent overseas publications (8). They conclude that previous guidelines have recommended over-surveillance for some groups and the summary diagram from their report is included as figure 1.

## Methods:

A cross-sectional review of the colonoscopy waiting list at Hawke's Bay District Health Board was undertaken as of October 2020. Referrals for full colonoscopy only were included. Combined oesophagogastroduodenoscopy referrals were excluded. A random sample of 10% was selected using a random number generator. Data was recorded in Microsoft Excel 2013. Primary outcome data included polyp histology and current follow up plans. Secondary outcome data included demographic variables, indications for colonoscopy, procedure quality, and clinic letters. New follow up times were generated using histology reports and the updated guidelines. Statistical analysis and modelling was performed with Prism 2014.

## Results:

The total colonoscopy waiting list comprised of 3030 referrals, of which 303 were randomly sampled. The median age was 66 ± 9.8 years and the was a 1.13 male:female predominance. The baseline demographics are recorded in table 1. There were no significant age differences between groups with Wilcoxon analysis (p=0.853)

The composition of the colonoscopy waiting list is shown in figure 2. Of the 303 sampled referrals, 156 (51%) were for polyp surveillance. The remaining referrals were for screening due to family history of colorectal cancer (27%), surveillance following personal history of colorectal cancer (10%), cancer screening for patients with Inflammatory Bowel Disease (5%), miscellaneous referrals (4%) and new referrals (2%).

The average surveillance follow up time was 4.08 ± 1.46 years. After reviewing the histology under the updated surveillance guidelines, the new average follow up time was 6.52 ± 3.24 years. The movement of individual patients between follow up categories has been mapped with a Sankey diagram (figure 3). Of the 156 polyp surveillance referrals reviewed, 28 (18%) did not require further surveillance and 39 (25%) were eligible to be deferred to the National Bowel Screening Programme under the new guidelines. 18 (12%) were assigned to the new 10 year surveillance category.

In total, 354 polyps were removed, averaging 2.27 polyps per patient and the largest polyp recorded per patient was 6.26mm on average. The majority of polyps were adenomatous (72%) followed by hyperplastic (16%) and sessile serrated (12%). The colonoscopy was complete in all results and a subjective rating given 94% of the time however, the Boston Bowel Preparation Score was only recorded in 62% of cases.

<b>Age</b>	66 ± 9.8 years
<b>Gender (M:F)</b>	1.13
<b>Number of polyps</b>	2.27 ± 1.32mm
<b>Polyp size</b>	6.26 ± 6.00mm
<b>Mean surveillance</b>	4.08 ± 1.46 years

Table 1: Characteristics of current colonoscopy waiting list patients

1 year	3 years	5 years	10 years or NBSP (whichever comes first)
<b>Adenomas*</b> >10 adenomas***	<b>Adenomas*</b> 5-10 adenomas <10 mm Adenoma ≥10 mm Tubulovillous adenoma or Villous adenoma Adenoma with HGD	<b>Adenomas*</b> 3-4 adenomas <10 mm	<b>Adenomas*</b> 1-2 adenomas <10 mm
<b>Serrated polyps*</b> Serrated polyposis syndrome - initial interval after polyp clearance***	<b>Serrated polyps*</b> ≥5 SSL <10 mm SSL ≥10 mm SSL with dysplasia Traditional serrated adenoma	<b>Serrated polyps*</b> 1-4 SSL <10 mm HP ≥10 mm**	

Figure 1: Summary of polyp surveillance intervals and criteria, copied from "Update on polyp surveillance guidelines" Te Aho o Te Kahu 2020.

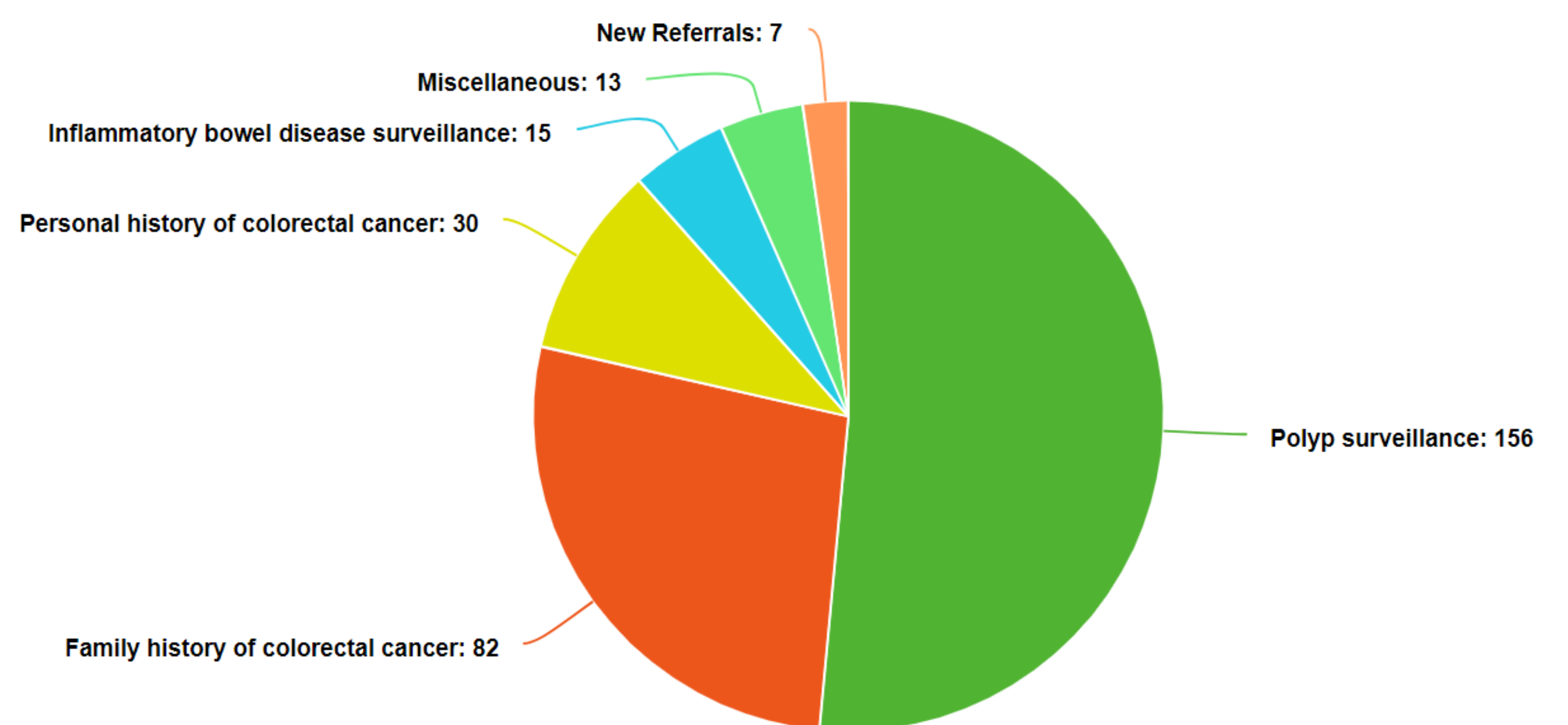


Figure 2: Breakdown of colonoscopy waiting list referrals by type

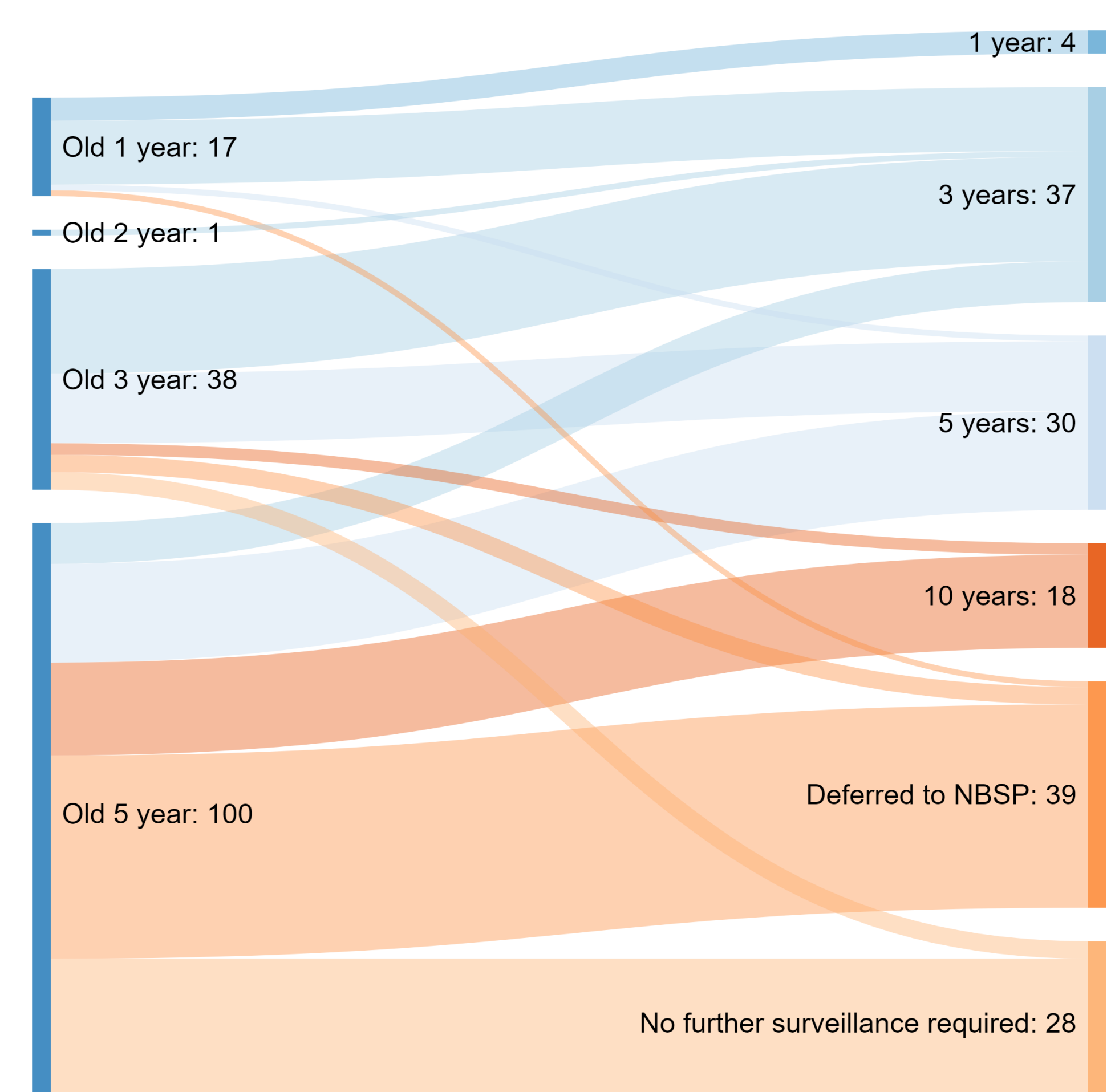


Figure 3: Sankey diagram showing the movement of referrals from their current intervals to the recommended intervals under the updated guidelines.

## Discussion

The updated polyp surveillance guidelines appears to reduce the demand for colonoscopy services considerably. 22% of the total waiting list would be either removed or deferred to the separate National Bowel Screening Programme. The average surveillance interval timeframe of the remaining referrals would increase by 60%, primarily due to recategorization as shown in the Sankey diagram. Importantly, these guidelines do not replace clinical decision making and the high number of patients scheduled for 1 year surveillance reflect clinical factors not appreciated in the guidelines that cannot be commented on by the review.

This review provides a snapshot of the demand for colonoscopy at a single, regional hospital. Polyp surveillance is the largest component and therefore should be highly considered during management and strategic planning. There do not appear to be other such publicly available reports. The age and gender disparity are in keeping with known demographics of polyps and colorectal cancer while the selected sample size and total number of cases are adequate to generalise the results to the wider waiting list.

This review identified two unexpected results in the way the service is provided. Firstly, polyps are sent to histology in individual specimen containers under National Bowel Screening but not for routine polyp surveillance. As the polyp is sometimes removed in fragments, it is not always clear how many polyps are adenomatous vs sessile serrated. In this review the fragmented reports were compared to the number of containers and an estimate was made. Secondly, on occasion, surveillance intervals were decided without histologic confirmation which will lead to mismanagement. This most commonly noted to be when a clinically diagnosed polyp was normal mucosal tissue on histology and artificially increases the colonoscopy surveillance waiting list.

## Conclusion

The updated polyp surveillance guidelines are expected to reduce total demand for colonoscopy services by approximately 22% and extend polyp surveillance timeframes by 60%. District health boards are encouraged to use this opportunity to review their short and long term strategic planning.

## References

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