Kentucky Colon Cancer Screening and Prevention Program Implementation and Outcomes Report July 2019 through June 2022

This report was prepared by:
The Kentucky Department for Public Health
Division of Prevention and Quality Improvement
Chronic Disease Prevention Branch
In collaboration with:
The Kentucky Colon Cancer Screening and Prevention Advisory Committee

Message from the Committee

Colorectal cancer is the second leading cause of cancer death when rates for men and women are combined. Recent years have seen an increase in colorectal cancer among younger adults and therefore an increased need to educate healthcare providers and the public about the need for screening soon after reaching age 45 or earlier depending on family history or symptoms. Despite success raising screening rates in Kentucky, many Kentuckians are not screened for colon cancer according to the American Cancer Society (ACS) guidelines. Most colon cancers can be prevented by removing polyps before they develop into cancer.

According to the Kentucky Revised Statutes 214.540-544, the Kentucky Colon Cancer Screening and Prevention Program and the Kentucky Colon Cancer Screening Advisory Committee were established for three purposes:

1) Increasing colon cancer screening.
2) Reducing morbidity and mortality from colon cancer.
3) Reducing the cost of treating colon cancer among citizens of the commonwealth.

As part of KRS 214.544, the Kentucky Colon Cancer Screening and Prevention Advisory Committee (KCCSPAC) provides recommendations for the overall implementation and conduct of the screening program and provides reports on program implementation outcomes and recommendations.

This report encompasses the last three years of the program, July 2019 through June 2022. The report period coincided with the COVID-19 pandemic. During FY20 and FY21 Kentucky saw a decrease in the number of colonoscopy services provided under this program compared to previous years. During the pandemic we know that in-person preventive cancer screenings declined for a variety of reasons ranging from temporary holds on elective in-person procedures to hesitancy to go into a provider's office.

In January 2020, the Cabinet for Health and Family Services accepted a donation from the Exact Science corporation for access to 1,000 Cologuard test kits. This contract extends through January 2024. Cologuard is a non-invasive colon cancer screening test used at home to collect a stool sample to detect altered DNA from adenomatous (pre-cancerous) polyps which could become cancer. The Kentucky Department for Public Health (KDPH) contracts with the Kentucky Cancer Link (https://kycancerlink.org/) to establish relationships with colonoscopy providers, evaluate individuals for program eligibility, provides education about how to complete the test and places the order for the Cologuard test via an electronic portal.

The outcomes reported here show that this program is making good progress in expanding colorectal screening services to our target population while meeting high clinical standards. In the next fiscal year committee members and KDPH staff will work together to expand public awareness for the program and continue to educate primary care providers about the efficacy of high-quality stool-based testing.

Whitney Jones, MD
Chair, Kentucky Colon Cancer Screening Program Advisory Committee

Contents

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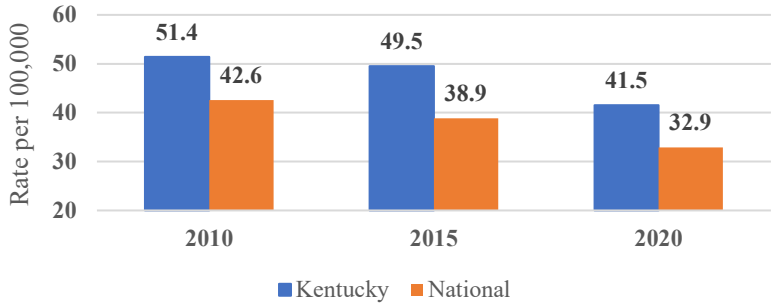
Status of Colorectal Cancer in Kentucky and the Nation

This section reviews trend data on the status of colorectal cancer (CRC) incidence, mortality, and screening for Kentucky relative to the nation.

Incidence Rates

Data from the Centers for Disease Control and Prevention and the National Cancer Institute show that Kentucky has the fourth highest incidence rate in the nation for colorectal cancer. The most recent data available show a 19% decrease in Kentucky's invasive colorectal cancer (CRC) incidence rate per 100,000 individuals for 2010 to 2020. It should be noted that the decreased incidence in 2020 is likely due to the COVID-19 pandemic which caused a decrease in elective procedures during most of 2020. The number of new colorectal cancer cases in Kentucky during this period ranged from 2,449 to 2,608 per year through 2019. This demonstrates excellent progress in Kentucky given our high rates of obesity, diabetes and tobacco use, combined with high poverty rates, all of which are known to be associated with increased incidence of colorectal cancer. Data from the National Cancer Institute Surveillance Epidemiology and End Results Program show the invasive colorectal cancer rates nationally have declined at a faster rate of 23% versus Kentucky's 19% decline during the same period. The number of new colorectal cancer cases nationwide during this period averaged 144,000 cases per year.

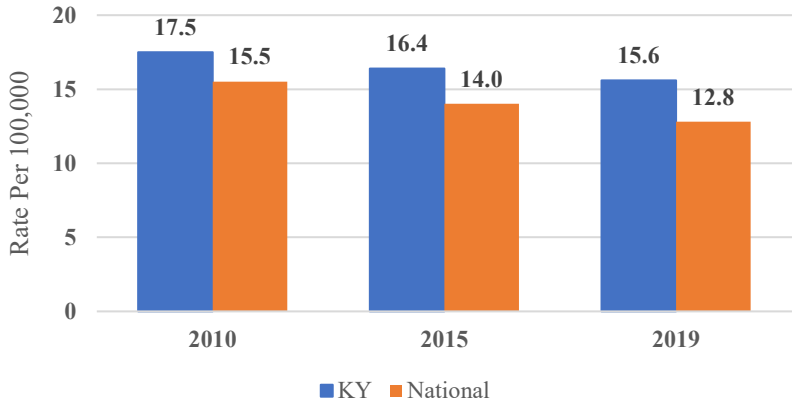
Chart 1: Kentucky vs. Nation
Age-Adjusted Invasive Colorectal Cancer Incidence Rate per 100,000 from 2010-2020
Data Source: Kentucky Cancer Registry and NIH SEER Data



Mortality Rates

Kentucky saw an 11% decrease in colorectal cancer mortality between 2010 and 2019. Despite this decrease, Kentucky had the second highest colorectal cancer mortality rate in the nation at 15.6 per 100,000 people. The number of Kentuckians who die from colorectal cancer decreased slightly from 896 in 2010 to 827 in 2019. In comparison, the nationwide mortality rate showed a 19% decrease between 2010 and 2019. Nationwide deaths during this time averaged 52,200 deaths per year.

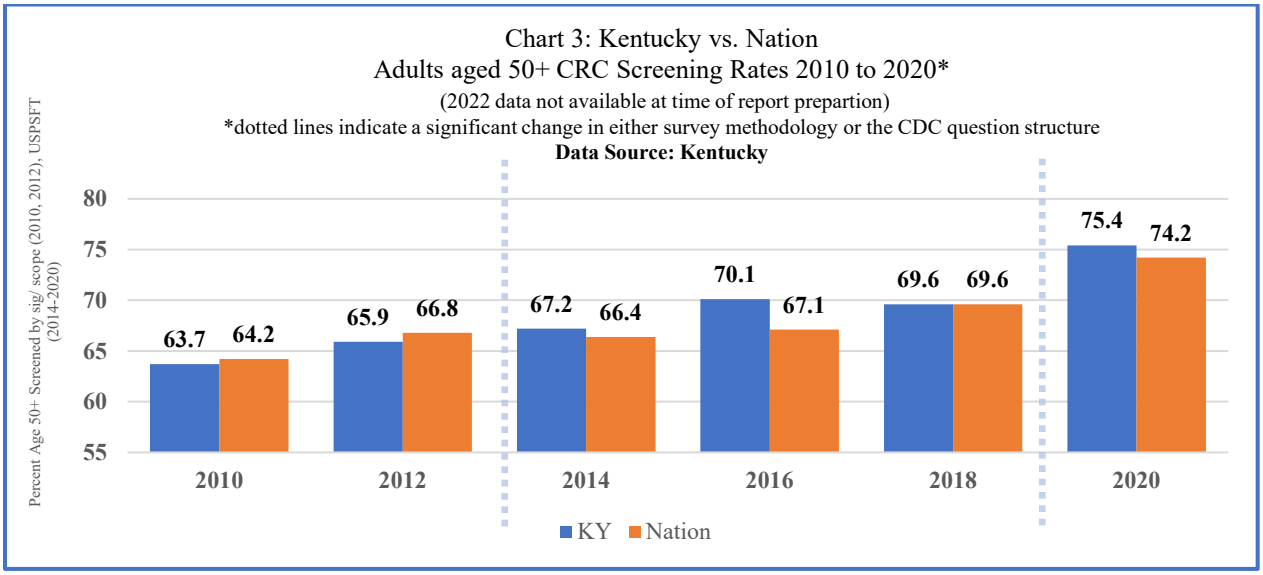
Chart 2: Kentucky vs. Nation
Age-Adjusted Colorectal Cancer Mortality Rate per 100,000
2010, 2015, 2019 (most recent available at time of preparation)
Data Source:Kentucky Cancer Registry and NIH SEER Data



Improvement in colorectal cancer screening rates

Colorectal cancer screening rates are measured based on response to the Kentucky Behavioral Risk Factor Survey (KyBRFS), a phone survey on a variety of health issues which is structured by the Centers for Disease Control and Prevention and implemented by state and territorial health departments.

Kentucky CRC screening rates have increased from 63.7% in 2010 to 75.4 in 2020, putting Kentucky close to the national goal of 80% screening. It is important to note that the onset of the COVID-19 pandemic is thought to have impacted the responses to the survey in a way that may have over-estimated rates for 2020.



Another source of data on CRC screening is from the Health Resources and Services Agency (HRSA) Uniform Data System (UDS), which tracks the performance of Federally Qualified Health Centers (FQHCs). These are federally funded, nonprofit health centers or clinics that serve medically underserved areas and populations. FQHCs provide comprehensive primary care services on a sliding fee scale to meet the medical needs of the underserved population they serve. A significant portion of this patient population are insured by Medicaid or Medicare but may also be uninsured.

According to a five-year summary of UDS data, colorectal cancer screening rates ranged between 43.98% - 47.33% from 2017 to 2021 (see Table 1). These rates are significantly lower than those reported in chart 3 above and demonstrate a continued need to support increased screening for this population.

Table 1: Kentucky Colorectal Screening Rates UDS- Five Year Summary
Source: Kentucky Health Center Program Uniform Data System (UDS)

Year	2017	2018	2019	2020	2021
Screening rate	46.74 %	44.21 %	46.04 %	43.98 %	47.33 %

Program Implementation

Implementation of the KCCSP is jointly planned by members of the advisory committee and staff at KDPH. The Kentucky Cancer Program (jointly administered by the University of Louisville and University of Kentucky) receives funding to provide public education and outreach to make healthcare providers and Kentucky residents aware of the program and the need for timely colorectal cancer screening. KDPH contracts with Kentucky Cancer Link (KCL) to establish agreements with colonoscopy providers across the state, determine eligibility for people seeking services and provider patient education and navigation to ensure that participants are successful in completing their screening.

Screening for colorectal cancer is available to any legal Kentucky residents who are uninsured or underinsured and have individual incomes at or below 300% of the federal poverty line. Patients are considered underinsured if they have an out-of-pocket maximum of 5% or more of the individual's annual income. These income guidelines allow the program to serve people at a modest income level who rarely qualify for state sponsored programs yet face financial barriers in accessing colorectal cancer screening.

Cologuard test kits are available to those at average risk for colorectal cancer. Colonoscopy is available to those at increased risk for colorectal cancer and for those at average risk if the person prefers colonoscopy to Cologuard. Finally, those with a positive Cologuard test or any other positive non-invasive stool test are eligible for colonoscopy through the program.

During FY20 the program provided 72 colorectal cancer screenings. Prior to the start of the COVID-19 pandemic, 45 colonoscopies had been provided between July 1, 2019, and February 28, 2020. From March 1, 2020, to June 30, 2020, 27 colonoscopies were provided, with most of those being completed during May and June after elective outpatient procedures restarted. More information about the results of those procedures is provided below under "Outcomes". Services began to increase FY21 and FY22 as COVID-19 pandemic restrictions ended and the scope of the pandemic declined.

Program Demographics

- In total, the program screened 564 patients in 3 years.
- 57% of patients screened in the last 3 years were female.
- 81% were white, 11% were black, 3% were Asian, and 5% were classified as other.
- 3% of the patients were Hispanic.

Table 2: Gender, Race, Ethnicity by Fiscal Year
Source: KCCSP Database

Year	FY20	FY21	FY22	3 Year Total
Female	43 (60%)	98 (54%)	179 (58%)	320 (57%)
Male	29 (40%)	85 (46%)	130 (42%)	244 (43%)
White	51 (71%)	146 (80%)	258 (83%)	455 (81%)
Black	10 (14%)	21 (11%)	32 (10%)	63 (11%)
Asian	3 (4%)	4 (2%)	7 (2%)	14 (3%)
Other	2 (3%)	12 (7%)	12 (4%)	26 (5%)
Hispanic	5 (7%)	5 (3%)	6 (2%)	16 (3%)
Non-Hispanic	67 (93%)	178 (97%)	303 (98%)	548 (97%)
Total Patients	72 (100%)	183 (100%)	309 (100%)	564 (100%)

- Over 3 years, there has been a 7-point increase in patients screened under age 30 and a 9-point increase in screening for those ages 30-44.
- Over half of patients were between the ages of 50-64.
- Note that most people 65 and older are covered by Medicare.

Table 3: Age Range by Fiscal Year
Source: KCCSP Database

Age Range	FY20	FY21	FY22	3YR Total
<30	4 (6%)	18 (10%)	41 (13%)	63 (11%)
30-44	5 (7%)	37 (20%)	49 (16%)	91 (16%)
45-49	7 (10%)	21 (11%)	39 (13%)	67 (12%)
50-64	48 (67%)	95 (52%)	160 (52%)	303 (54%)
65-75	8 (11%)	11 (6%)	19 (6%)	38 (7%)
76+	0 (0%)	1 (1%)	1 (0%)	2 (0%)
Total Patients	72 (100%)	183 (100%)	309 (100%)	564 (100%)

- The underinsured patient population fluctuated from FY20 (17%) to FY21 (56%).
- Overall, more patients were uninsured (306) than underinsured (263).

Table 4: Insurance Status by Fiscal Year
Source: KCCSP Database

Insurance Status	FY20	FY21	FY22	3YR Total
Uninsured	60 (83%)	81 (44%)	163 (53%)	306 (54%)
Underinsured	12 (17%)	102 (56%)	146 (47%)	263 (46%)
Total Patients	72 (100%)	183 (100%)	309 (100%)	564 (100%)

Program Outcomes FY20, FY21 and FY22

Table 5 illustrates stool DNA test results for fiscal year 2022. FY22 introduced the use of at-home stool DNA tests through Cologuard- a screening tool that is available to average risk individuals 45 and older. The test detects specific DNA indicators or blood in the stool. There were no cancers diagnosed among the follow-up colonoscopies; however, two patients had polyps removed and one patient had a precancerous adenoma removed.

Table 5: Stool DNA Test Results by Fiscal Year
Source: KCCSP database

Fiscal Year	# Negative	# Positive	Follow-up Scope Completed	Follow-up Pending	# of Tests Resulted
FY22	49 (91%)	5 (9%)	3* (9%)	0 (0%)	54 (100%)
*3 follow-up colonoscopies were conducted in fiscal year 2022 while the remaining 2 were conducted in fiscal year 2023					

Table 6 below shows patient reported personal and family history of colorectal cancer, symptoms related to colorectal cancer, and positive test results on stool-based testing which requires completion of a colonoscopy for final diagnosis. Patients at average risk for colon cancer may choose to have a colonoscopy or receive a Cologuard stool test to use at home. Anyone with a personal or family history of polyps or colon cancer, or who have symptoms of colon cancer or a medical condition that increases risk of colorectal cancer are referred for colonoscopy. Only 15% of patients served by the program are at average risk for CRC.

Table 6: Self-Reported Health History by Fiscal Year* Source: KCCSP Database				
Fiscal Year	**FY20**	**FY21**	**FY22**	**3YR Total**
Positive FIT**	11 (15%)	11 (6%)	10 (4%)	32 (6%)
Positive Stool DNA	1 (1%)	4 (2%)	11 (4%)	16 (3%)
Previous Diagnosis of CRC	1 (1%)	5 (3%)	8 (3%)	14 (3%)
Previous Adenoma	17 (24%)	55 (30%)	72 (27%)	144 (28%)
Family History < Age 60	18 (25%)	48 (26%)	49 (19%)	115 (22%)
Family History of FAP***	1 (1%)	4 (2%)	3 (1%)	8 (2%)
Family History of Lynch	0 (0%)	1 (1%)	2 (1%)	3 (1%)
Ulcerative Colitis	2 (3%)	7 (7%)	14 (5%)	23 (5%)
Crohn's Disease	2 (3%)	5 (5%)	7 (3%)	14 (3%)
Unexplained 10% Weight Loss	8 (11%)	19 (10%)	27 (10%)	54 (11%)
Blood in Stool	19 (26%)	58 (32%)	92 (35%)	169 (33%)
Recent Change in Bowel Habit	29 (40%)	79 (43%)	127 (49%)	235 (46%)
Average Risk	14 (19%)	24 (13%)	37 (14%)	75 (15%)
Total Cases	72	183	258	513

***Many patients report multiple risk factors, conditions or symptoms related to colorectal cancer. Therefore, the table columns below add up to more than 100%**
****Fecal Immunochemical Test which detects blood in stool (CDC, 2023)**
*****Familial Adenomatous Polyposis**

Table 7 below shows colonoscopy results and adenoma detection rates for patients at average risk for colorectal cancer. The adenoma detection rate, or ADR, is an important colonoscopy quality measure and is based on results from average risk patients. Adenomas included in this measure may be high grade or non-high grade. Based on American Gastroenterology Society guidelines, a high-quality colonoscopy practice will identify 20% adenomas in women and 30% in men or 25% overall.

A small percentage of patients each year had hyperplastic polyps removed which are a type of polyp that very rarely results in cancer. Non-high-grade adenomas were found in 36% of patients screening in FY20, 42% of patients screened in FY21, and 26% of patients screened in FY22. No high-grade adenomas or cancers were detected during the reporting period.

Table 7: Adenoma Detection Rate by Fiscal Year (Average Risk Patients Only) Source: KCCSP Database				
Fiscal Year	**FY20**	**FY21**	**FY22**	**3YR Total**
Adenoma Detection Rate	36%	42%	26%	33%
Total Average Risk Colonoscopies	14 (100%)	24 (100%)	34 (100%)	72 (100%)

Table 8 shows colonoscopy results for patients who were at increased risk for CRC at the time of the procedure. Patients at increased rates for CRC may have a personal or family history of adenoma removal or CRC, had a positive stool blood test, certain gastro-intestinal conditions, or new symptoms related to

CRC. The results for FY20, FY21, and FY22 show that the most common colonoscopy result for patients at increased risk was negative/normal findings. The next most common findings were removals of non-high-grade adenomas and hyperplastic polyps. There were no colorectal cancers diagnosed during the reporting period. There were four incomplete procedures due to tortuous colons, meaning the colon has twists that make it difficult to advance the endoscope.

Table 8: Increased Risk Colonoscopy Results by Fiscal Year
Source: KCCSP Database

Fiscal Year	FY20	FY21	FY22	Total
Negative/ Normal	28 (48%)	99 (62%)	151 (67%)	278 (63%)
Hyperplastic Polyp	5 (9%)	12 (8%)	21 (9%)	38 (9%)
Non-High-Grade Adenoma	23 (40%)	45 (28%)	47 (21%)	115 (26%)
High Grade Adenoma	0 (0%)	2 (1%)	4 (2%)	6 (1%)
Rectal Cancer	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Colon Cancer	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Incomplete Procedure	2 (3%)	1 (1%)	1 (1%)	4 (1%)
Total Colonoscopies	58 (100%)	159 (100%)	224 (100%)	441 (100%)

***FY22 includes 3 follow-up colonoscopies due to positive Cologuard test**

Colonoscopy preparation quality, also referred to as bowel preparation quality, is a quality measure that indicates the level of colon cleanliness in patients as determined by the colonoscopy provider. Approximately 95% of patients achieved good to excellent quality which is considered "adequate" prep. Very few patients were reported as having inadequate (poor or fair) bowel prep.

Standards established by the American Gastroenterological Association state that endoscopists should achieve a cecal intubation rate of greater than or equal to 90%. Cecal intubation (the endoscope should reach the cecum) is a quality measure that indicates whether the entire length of the colon was examined (Keswani et al., 2021). Across all fiscal years, the cecal intubation rate was above 93% with very few (average 4%) screenings not reaching the cecum. If the cecum is not reached during colonoscopy, a polyp could go undiscovered.

Conclusions and Recommendations

The rate of preventive screenings among Kentucky residents has increased over the past 10 years. In conjunction with that increase in preventive screening the rate of new colorectal cancer cases and mortality have declined. However, this decrease in incidence and mortality is not keeping pace with the decline seen nationally. It is likely that Kentucky incidence rates are impacted by known health risks common in the population including tobacco use, obesity, poor nutrition, diabetes, and lack of easy access to colorectal cancer screening services in some parts of the state.

The KCCSP has been successful in expanding program services to include underinsured Kentucky residents. Kentucky Cancer Link has recruited more colonoscopy providers to participate in this program across the state and has succeeded in reaching a younger adult eligible population. The program is also providing high quality services through their contracts as demonstrated by the high prep-rate, adenoma detection rate, and cecal intubation rate.

Per KRS 214.544(7), the advisory committee is providing recommendations for future planning and implementation of the Kentucky Colon Cancer Screening and Prevention Program. These recommendations for the program are to:

1. Maintain current level of financial support from legislature.
2. Continue to focus on public awareness activities which improve CRC screening rates, including creating messaging about the CRC increase in younger adults.
3. Continue to educate and inform legislators and other decision makers about opportunities to support CRC screening through policy changes.
4. Continue to educate and inform primary care providers about the efficacy of high-quality stool-based screening tests for patients resistant to undergo colonoscopy or who have barriers to easily completing a colonoscopy and the change in guidelines to reduce age of screening to age 45.

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