



Kansas

**Increased Colorectal Cancer Screening Rates
and Lifestyle Improvements
Can Reduce Morbidity, Mortality
and Save Health Care Dollars**

**Research
Summary**

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Our Vision – Healthy Kansans Living in Safe and Sustainable Environments

As the state's environmental protection and public health agency, KDHE promotes responsible choices to protect the health and environment for all Kansans. Through education, direct services, and the assessment of data and trends, coupled with policy development and enforcement, KDHE will improve health and quality of life. We prevent illness, injuries and foster a safe and sustainable environment for the people of Kansas.

Increased Colorectal Cancer Screening Rates and Lifestyle Improvements Can Reduce Morbidity, Mortality and Save Health Care Dollars

Colorectal cancer (CRC) – cancer of the large intestine and rectum -- is the 3rd leading cause of cancer death in the United States¹. In 2007 it was the 3rd leading cause of cancer death for Kansas men and women, accounting for an estimated 10 percent of cancer deaths². According to the American Cancer Society (ACS), nearly 50,000 US residents are expected to die from CRC in 2009¹, while in Kansas more than 500 die annually from the disease². The ACS estimated that in 2008 more than 145,000 people would be diagnosed with colorectal cancer³, while on average, 1,454 cases of invasive CRC are diagnosed in Kansas annually⁴. However, many morbidities and mortalities can be avoided through prevention and early detection screening³.

Screening rates are reported to be relatively low across the nation. In 2006, the recent fecal occult blood testing (FOBT) percentage for adults aged 50 and older was 16.6% in Kansas¹, while the Kansas Behavioral Risk Factor Surveillance System (BRFSS) indicated that an estimated 74.8 percent of adults age 50 years and older had not received an FOBT during the preceding two years⁵. Colorectal cancer screening with endoscopy tests (either a sigmoidoscopy or colonoscopy within the past 10 years) were administered to 51% of Kansans 50 years and older, although in 2006, 43.5 percent of adults 50 years and older had never received a sigmoidoscopy or colonoscopy⁵. It is estimated that early detection could save more than half of those expected to die of CRC¹. Were screening rates markedly improved, CRC hospitalizations might also be reduced and significant health care dollars could be saved. The purpose of this article is to review CRC Kansas direct hospital cost trends and to estimate expected cost savings from improving CRC preventive screenings rates.

METHODOLOGY

SAS 9.1 software was used in preparing this analysis. Kansas community hospital discharge data from the Kansas Hospital Association (KHA) for 2003-2006⁶ was used to obtain CRC Diagnosis Related Groups (DRGs) frequencies for records containing DRGs 146 – 150, 152-158, 164-165, 170-173, 468, 476-477, 185, 541, and 567-570 and a primary diagnosis of International Classification of Disease 9th Edition (ICD-9) codes of 152-154. Mean DRG charges and payments for records containing primary diagnoses codes 152-154 were obtained from Kansas Medicaid Data 2005-2006, provided by the Centers for Medicare and Medicaid Services via Kansas Health Policy Authority (KHPA)⁷, and Kansas Health Insurance Information System (KHIS) data 2003-2005 provided by the Kansas Insurance Department⁸. Mean Medicare payment estimates for CRC DRGs for 2003-2006 were furnished by Ingenix⁹. Missing charges and payments were estimated by using the Consumer Price Index (CPI) for Medical Care 2003-2006¹⁰. Yearly major payer total charges were calculated

by multiplying KHA CRC yearly frequencies by Medicare, KHIS and Medicaid means. Means were adjusted to 2003 levels using the Consumer Price Index for Medical Care to determine whether direct costs were changing from the 2003 dollar value. The percent of change was calculated by subtracting 2003 means from 2006 means and dividing by 2003 means.

CRC RISK FACTORS AND PREVENTIVE SCREENING

Although not all risk factors for CRC are modifiable, an estimated half of all colon cancers may be preventable through lifestyle changes and widespread screening¹¹. Non-modifiable, modifiable, preventive screenings and follow-up may impact the incidence of CRC. CRC non-modifiable risk factors include family history¹¹, a history of bowel disease¹¹, a history of adenomatous polyps¹¹, genetic traits¹¹, a diagnosis of diabetes¹², and/or an age of over age 50¹¹. CRC modifiable risk factors include moderate alcohol consumption i.e., 30 grams, or about two drinks per day¹³, red or processed meat consumption^{14, 15}, physical inactivity¹⁶, overweight and obesity¹⁴, and smoking¹⁷.

Diagnosed in early stages, CRC is more likely curable. Performed regularly, it is thought that screening tests and following-up on associated recommendations could reduce the present CRC mortality rate by half,³ by decreasing CRC incidence and by detecting cancers at earlier, more treatable stages³. Some of the available screening tools include the FOBT, flexible sigmoidoscopy, and colonoscopy screening, among others. The Centers for Disease Control (CDC) recommends that patients over 50 have a FOBT test bi-annually or annually and a sigmoidoscopy every five years. A colonoscopy should be performed every 10 years¹⁹. The most reliable way to prevent CRC is regular screenings, removal of adenomatous polyps if discovered, and minimizing modifiable risk factors²⁰.

Table 1: Kansas Hospital Discharge Estimated Frequencies, Charges, and Medical Care CPI Adjustments, 2003-2006*

Year	Number of Discharges	Mean Charges	Total Charges	CPI Adjustment	CPI Adjusted Mean
2003**	1,254	\$17,442	\$21,872,268	1	\$17,442
2004**	1,275	\$19,065	\$24,308,079	0.958078	\$18,266
2005**	1,198	\$20,557	\$24,626,759	0.919245	\$18,897
2006**	1,036	\$20,658	\$21,402,175	0.8837	\$18,256
Total**	4,763		\$92,209,281		

* Based on Kansas Hospital Discharge, KHIS, and Medicaid Data, and Medicare average payments. Data for 2006 are adjusted from previous years costs based on the CPI for Medical Care.

** Hospital discharge frequencies are from KHA data.

Table 2: Kansas Hospital Discharge Estimated Frequencies, Payments, and Medical Care CPI Adjustments, 2003-2006*

Year	Number of Discharges	Mean Payments	Total Payments	CPI Adjustment	CPI Adjusted Mean
2003**	1,254	\$11,702	\$14,674,208	1	\$11,702
2004**	1,275	\$12,414	\$15,828,462	0.958078	\$11,894
2005**	1,198	\$13,915	\$16,670,098	0.919245	\$12,791
2006**	1,036	\$14,801	\$15,333,525	0.8837	\$13,079
Total**	4,763		\$62,506,293		

* Based on Kansas Hospital Discharge, KHIS, and Medicaid Data, and Medicare average payments. Data for 2006 are adjusted from previous years costs based on the CPI for Medical Care.

** Hospital discharge frequencies are from KHA data.

HEALTH AND FINANCIAL BENEFITS WITH IMPROVED SCREENING LEVELS

Review of Kansas data shows some decline in the number of major payer hospital discharges 2003-2006, which may indicate a declining trend in hospital discharges (17.4 percent decline). It appears that mean charges and payments have risen in both actual and adjusted dollars between 2003 and 2006 (see Table 1 and 2). Kansas CRC actual and adjusted mean charges show 18.4 percent and 4.7 percent increases, respectively; while Kansas CRC actual and adjusted mean payments show 26.5 percent and 11.8 percent increases, respectively. Improving screening rates for CRC holds promise for substantial return on investment. Were screening rates improved to recommended rates, possible cost savings could occur and lives could be saved. The 2003-2006 estimated Kansas \$92 Million in CRC hospitalization charges might have fallen to \$46 Million in CRC hospitalization charges were preventive screening rates improved as recommended. The 2003-2006 estimated \$62.5 Million Kansas CRC hospitalization payments might have declined by half to \$31 Million. As earlier stated, 500 Kansans are expected to die due to CRC annually. A combination of lifestyle changes and improved screening rates to recommended levels could save 250 Kansas lives annually and reduce hospitalization substantially.

DATA LIMITATIONS

The present article contains Kansas hospitalization direct cost estimates derived from a number of sources. Cost comparisons are based on KHA counts, and the major payers of health care - Medicaid, KHIS and Medicare. Data limitations for these data sets are elsewhere documented and are important in assessing the reliability of the present analysis. For example, 1) For KHA data, it is not possible to distinguish between patients admitted multiple times in a single year, which may cause duplicative record counts; 2) For KHA data, the lack of

patient identifiers limits data matching capacity which can affect output reliability; 3) Medicare calculations are based on average national payments applied to Kansas counts. Use of actual Medicare would strengthen the analysis; 4) KHIS data consists of the experience of the top 20 Kansas private health insurers only; thus not all private insurance experience is represented in the data. A significant number of colorectal cancer hospitalizations do not appear in the KHIS data. Census insurance data estimates the number of privately insured Kansans to be approximately two million insureds, while the KHIS database contains fewer than one million covered lives at the end of 2007. In addition, it is uncertain what impact the Employee Retirement Income Security Act (ERISA) might have on private insured numbers since they are not included in the KHIS data collection; and 5) CRC charges and payments for self-pay and other hospital users and information contained in specialty hospital, Indian Health Service and Veteran's Administration data are not available for inclusion in the analysis. Further analysis is needed for a more comprehensive review of cost trend estimates in the area of CRC. Reliable estimates for these costs are difficult to obtain. The present article refers only to direct hospitalization costs related to CRC, and does not address indirect and other costs associated with hospitalization i.e., pharmaceuticals, health care professional charges, etc. Also omitted are periodic screening costs, and outpatient, physician office and prescription costs.

CONCLUSION

An aging population, changing demographics, and an increasing number of CRC survivors underscore the need for prevention and early detection of CRC to reduce mortality and improve quality of life²⁰. Screening as recommended by CDC improves the chance that CRC can be detected at an earlier stage, when treatment is less invasive, less expensive and recovery is quicker. It is critical that the public continue to be informed of the importance of physical activity, proper diet, maintaining a healthy body weight, early detection through screening, and prompt treatment of CRC. "The American Cancer Society has identified CRC as a major priority because the application of existing knowledge has such great potential to prevent cancer, save lives and diminish suffering³." Personal health and medical prevention strategies show promise for CRC risk reduction, treatment effectiveness and great potential cost savings.

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