An examination of colorectal cancer among young adults in NEPA

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Updated November 2020

Several recent reports have described increasing incidence of and mortality from colorectal cancer (CRC) among Americans younger than 55 years.(1,2) The increase has been largely due to tumors in the distal colon and rectum. To investigate whether similar trends were occurring in northeast Pennsylvania (NEPA), we examined PA Department of Health data on CRC incidence, mortality and stage at diagnosis for the six-county region of NEPA served by the Northeast Regional Cancer Institute (Lackawanna, Luzerne, Pike, Susquehanna, Wayne and Wyoming counties). These data were obtained online from the Pennsylvania Department of Health's Enterprise Data Dissemination Informatics Exchange (EDDIE). Data on cancer incidence and stage at diagnosis were available for the period 1990 through 2017; data on cancer mortality were available for the period 2001 through 2018. Age-adjusted rates were calculated using the 2000 standard US population.

Between 1990-1994 and 2015-2017, the age-adjusted incidence for CRC among all ages in NEPA decreased significantly. The incidence rate was 69.8 per 100,000 (95% confidence interval: 67.4 – 72.1/100,000) in 1990-1994; in 2010-2014, it was 45.0 (95% CI: 43.2 – 46.9)/100,000; and in 2015-2017, it was 42.8 (95% CI: 40.4 – 45.1)/100,000. In 2015-2017, 122/1276 (9.6%) of newly diagnosed CRC cases were younger than 50 years of age. Among this age group, CRC incidence increased significantly during the years examined. In 1990-1994, the incidence rate was 5.6 (95% CI: 4.6 – 6.6)/100,000. By 2010-2014, the incidence rate in this age group had increased by 38% to a rate of 7.7 (95% CI: 6.6 – 8.9)/100,000; and in 2015-2017, it was 10.0 (95% CI: 8.2 – 11.7)/100,000. The incidence rate among those younger than 50 increased by 79% between 1990-1994 and 2015-2017. Incidence rates by age for those younger than 50 in these three periods are shown in figure 1. For most age categories over 19 years, incidence was materially higher during 2010-2014 and 2015-2017. The increase in incidence in 2015-2017 was most striking for those in the 45 to 49 age group.

Between 2001-2005 and 2011-2015, CRC mortality among all ages combined decreased from 22.0 (95% CI: 20.7 – 23.3)/100,000 to 16.6 (95% CI: 15.5 – 17.7)/100,000. In 2016-2018, mortality decreased further to 14.9 (95% CI: 13.6 – 16.2)/100,000. In 2016-2018, 20/484 (4.1%) of patients dying of CRC in NEPA were younger than 50 years. Among those < 50, the mortality rate was 1.6 (95% CI: 1.1 – 2.1)/100,000 in 2001-2005; in 2011-2015, the rate was 2.2 (95%CI: 1.5 – 2.8)/100,000; and in 2016-2018, it was 1.7 (95% CI: 0.93 – 2.4)/100,000. The differences in mortality rates among those < 50 were not statistically significant. Because of the small number of deaths (n=20 in 2016-2018), the confidence intervals are fairly wide and overlap with the mortality rates in each time period. Mortality rates by age for those < 50 are shown in figure 2.

Stage at diagnosis for CRC diagnosed in 2015 - 2017 was examined by age: shown in figure 3. For all ages combined, 38.6% and 53.5% were diagnosed at Early (in-situ and Localized) and Late Stages, respectively. Among cases < 50, 36.2% were diagnosed at Early Stage and 57.7% were diagnosed at Late Stage. The difference in prevalence of Late Stage was not statistically significant ($p = 0.61$). Also among those < 50 diagnosed in 2015-2017, 38.5% had tumors in the rectosigmoid or rectum.

This analysis documents a recent increase in the incidence of CRC in NEPA among those younger than 50 years of age, which is particularly notable in light of the clear decrease in overall CRC incidence over the past 25+ years. Recent increases in the prevalence of obesity(3) and type II diabetes(4) and changes in the typical American diet (increased consumption of fast food)(5) may be contributing to the increase in CRC in this young age group, but further research is needed. Screening for CRC has not been commonly conducted among patients younger than 50 without a history of inflammatory bowel disease, a family history of a hereditary cancer syndrome or other high-risk condition. In the

absence of screening, a high prevalence of advanced stage disease is expected. The high prevalence of distal tumors is worth note, as at least some of these (e.g., rectal tumors) may be detected by rectal exam. Until recently, the recommended age to begin screening for CRC among average risk individuals has been 50 years of age. Because of the increasing incidence of CRC among those younger than 50 in the US, several organizations have begun to recommend lowering the age to begin screening to 45. In 2018, The American Cancer Society lowered the age to begin screening in average risk adults to 45 years.(6) In October 2020, the United States Preventative Services Task Force proposed a similar update to its guidelines.(7) The current analysis suggests that the updated screening recommendations are appropriate for northeast Pennsylvania where the incidence of CRC is higher than the US average. Also among patients younger than 45, these data suggest that clinicians should consider the possibility of an underlying malignancy among patients with symptoms consistent with this diagnosis.

For more information on cancer incidence and mortality in NEPA, see the latest Cancer Surveillance Report on the Northeast Regional Cancer Institute's website (www.cancernepa.org).

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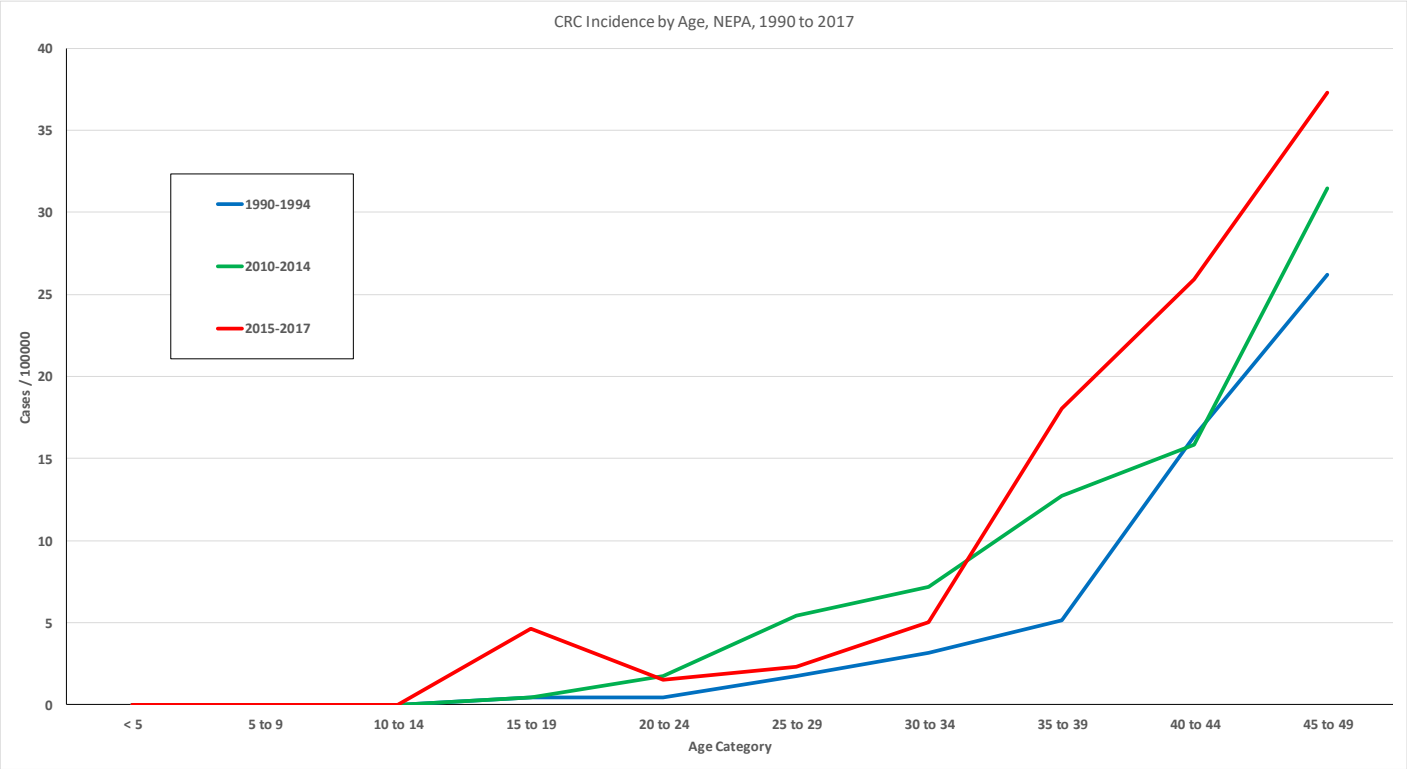

Figure 1. Age-specific incidence of CRC among adults < 50 years of age in NEPA in 1990-1994 and 2015-2017.

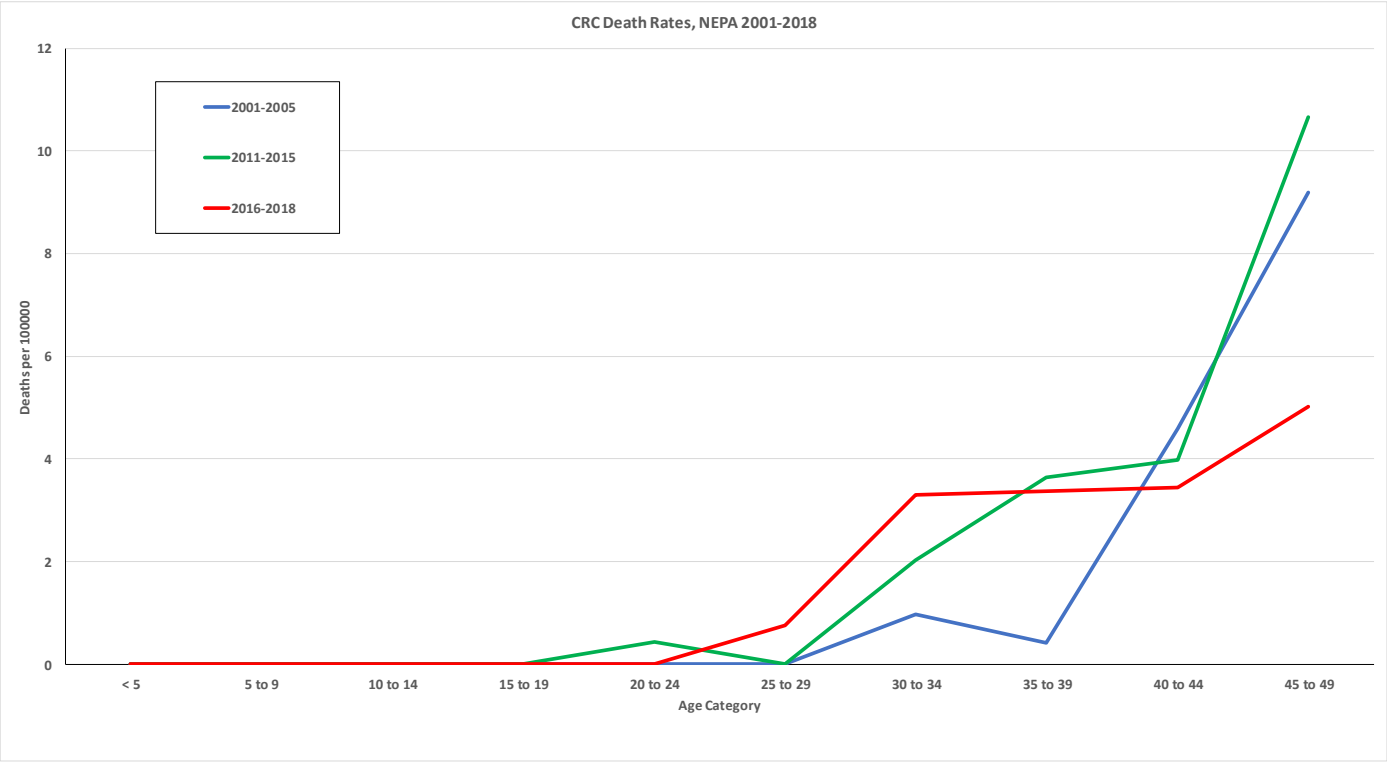

Figure 2. Age-specific mortality from CRC among adults < 50 years of age in NEPA in 2001-2005 and 2016-2018.

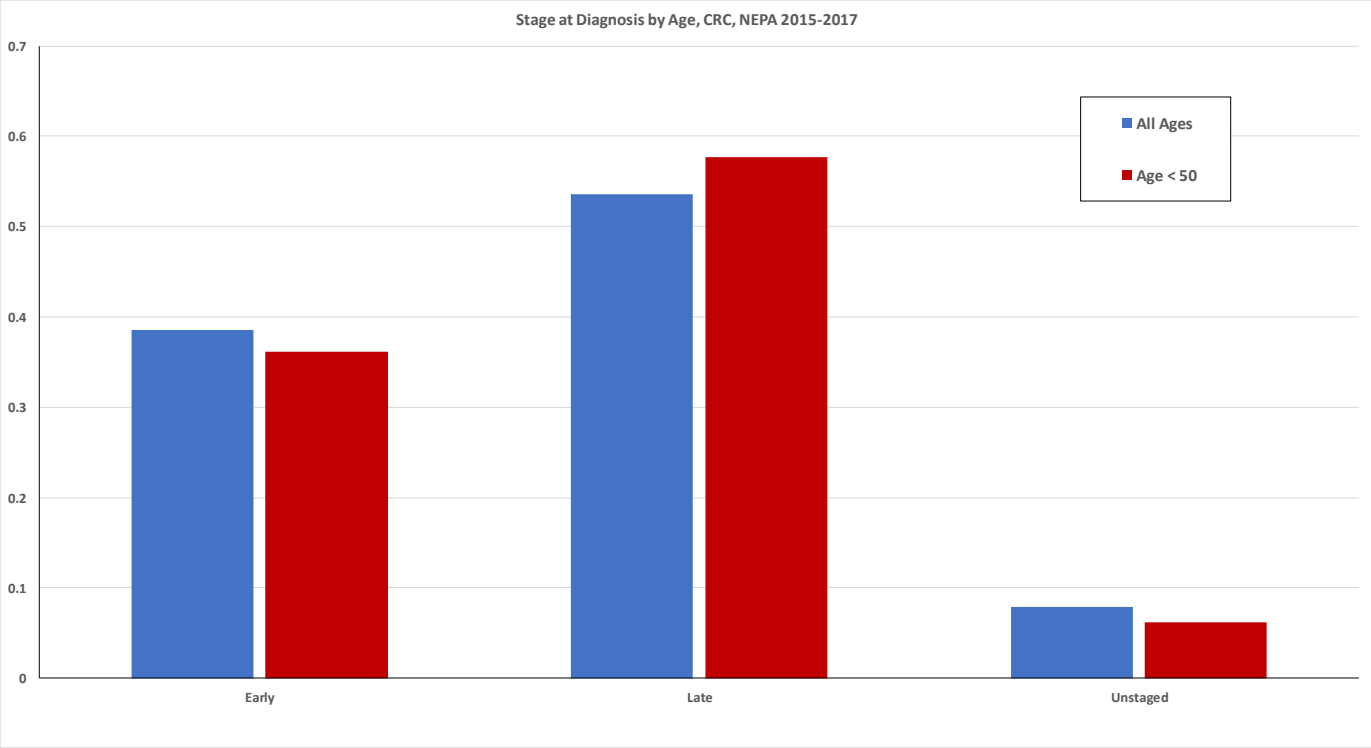

Figure 3. Stage at diagnosis of CRC by age group in NEPA in 2015-17.