2020 NPCR KENTUCKY CANCER REGISTRY SUCCESS STORY

STORY TOPIC: Measuring the Quality of Cancer Care in Community Hospitals

STORY CATEGORY: Public Health Impact

STORY TITLE: Improving Cancer Patient Care in Kentucky's Community Hospitals

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SUMMARY

The Markey Cancer Center Affiliate Network (MCCAN) is a collaboration between the Markey Cancer Center and Kentucky community hospitals designed to enhance the quality of care for cancer patients treated at community hospitals. The Kentucky Cancer Registry (KCR) has developed computer algorithms to determine whether eligible cancer patients were treated according to evidence-based quality of care measures established by the American College of Surgeons (ACoS) Commission on Cancer (CoC). These algorithms were used to measure changes in the quality of care for breast and colon cancer patients treated in participating hospitals before and after joining the Network (1).

CHALLENGE

The majority of cancer patients in the USA (80–85%) are treated at community hospitals.(2) This percentage is very likely even higher for common malignancies such as breast or colon cancer that can be treated by surgeons in hospitals of nearly any size. Being treated at a community hospital that is close to the patient's home provides some distinct advantages for both the cancer patient and their family. This is especially true in rural areas where distances to larger university-based hospitals can be much greater like in Kentucky. It is also important to note that academic medical centers have a limited capacity to treat cancer patients and thus, community hospitals will need to continue treating most cancer patients well into the future. However, cancer treatment is continually changing, and it can be challenging for community hospitals to ensure that their patients have access to new treatments and diagnostic procedures. In addition, there is evidence that cancer patients treated at community hospitals receive less guideline-concordant care and experience poorer outcomes compared with patients treated at academic medical centers (3,4).

Measuring the quality of cancer treatment in hospitals can also be challenging. The CoC has developed quality of care measures that are evidence-based and endorsed by the National Quality Forum. These quality measures are collectively called Cancer Program Practice Profile Reports (CP3R) (5,6). All hospitals accredited by the CoC are required to have annual compliance rates for these measures that equal or exceed the expected rates specified by the CoC. However, there is often no data regarding the performance on these measures by the community hospitals not accredited by the CoC.

SOLUTION

The University of Kentucky Markey Cancer Center developed the MCCAN to improve the quality of cancer care for patients treated in community hospitals throughout the state. As a requirement for joining the network, community hospitals agree to seek CoC accreditation. MCCAN staff provide ongoing educational programs for participating hospitals, including live events, webinars, and instructional videos that address the clinical

practice criteria necessary to treat cancer patients according to each of the CoC CP3R quality of care measures. Currently 21 community hospitals participate in the Network. These hospitals have Joined the network over several years.
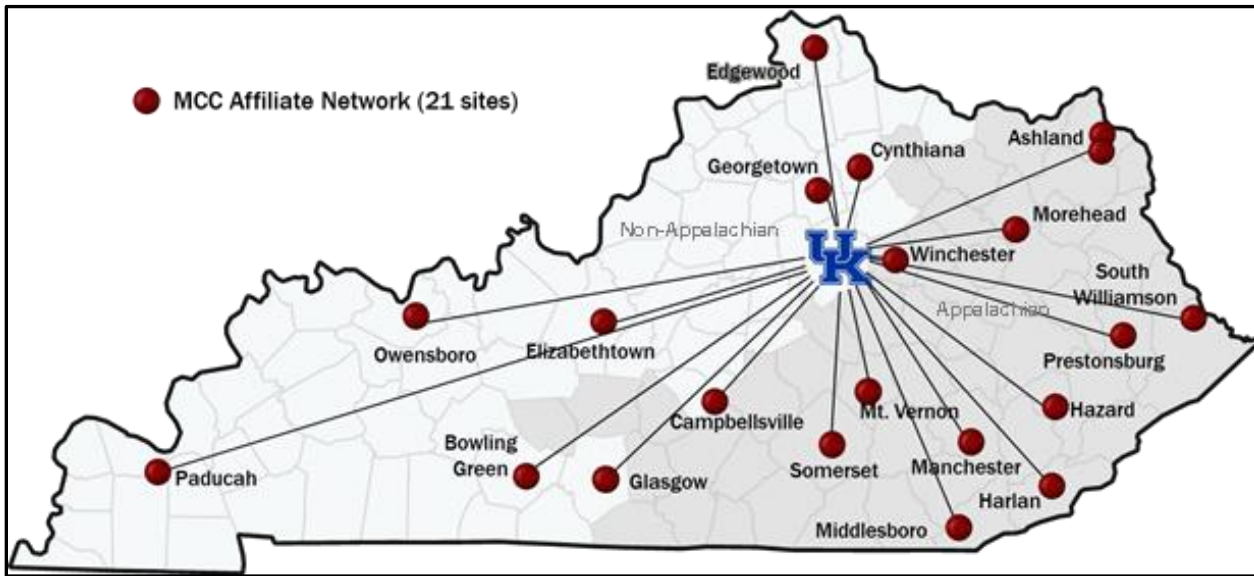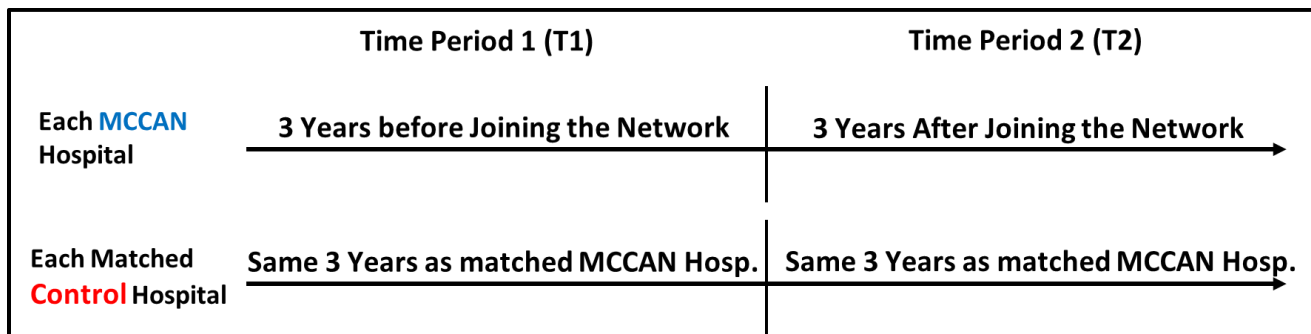

MCCAN asked KCR to help evaluate whether there were improvements in the quality-of-care measures for breast and colon cancer patients treated in the participating hospitals between the three years before each hospital joined the network and the three years after the hospital joined the network. To be included in this evaluation, a hospital had to have been in the Network for at least three years prior to 2018 so that compliance with the quality measures could be assessed for the 3 years before the hospital joined MCCAN and the 3 years afterward. Thirteen MCCAN hospitals met the criteria for inclusion in the evaluation. Since hospitals joined the network over several years, the CP3R quality measures used in this evaluation also had to have been in place at least three years before the first hospital joined the network and had to have remained in place through 2017. Two breast and two colon cancer CP3R measures met the criteria for inclusion in this evaluation. These measures are as follows:

1. Radiation therapy administered within 1 year (365 days) after diagnosis for women younger than 70 years receiving breast-conserving surgery for breast cancer (BCSRT).
2. Radiation therapy recommended or administered after any mastectomy within 1 year (365 days) after diagnosis of breast cancer for women with four or more positive regional lymph nodes (MASTRT).
3. Adjuvant chemotherapy recommended or administered within 4 months (120 days) after diagnosis for patients younger than 80 years with American Joint Committee on Cancer (AJCC) stage 3 (lymph-node-positive) colon cancer (ACT).
4. At least 12 regional lymph nodes removed and pathologically examined for resected colon cancer (12RLN). Since the inception of the CP3R measures, the KCR has created and implemented computer algorithms that carefully assess both the eligibility of each cancer patient for the quality measures that can be evaluated using Registry data and the proportion of eligible patients for a given hospital compliant with each CP3R measure. These algorithms have been carefully tested to ensure that they accurately reflect each eligible patients' compliance with the CP3R measures. To the best of our knowledge, KCR is the only population-based registry to develop these algorithms.
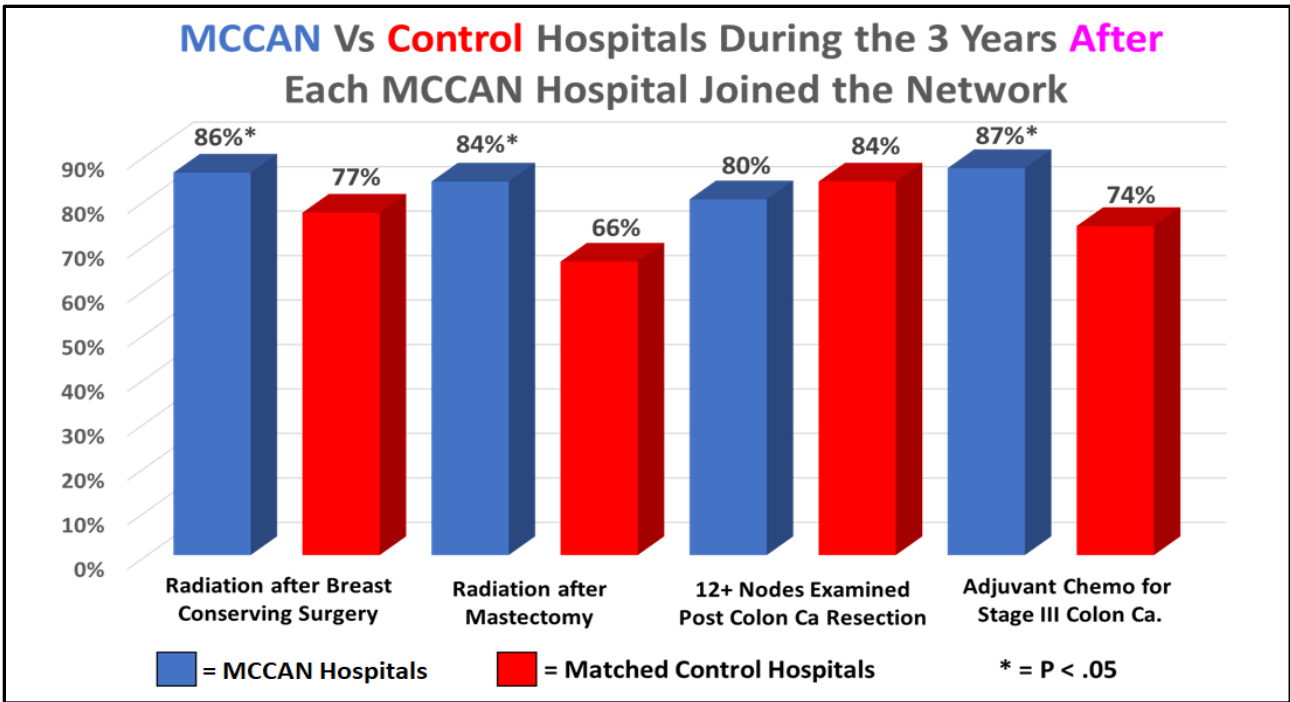
RESULTS

KCR evaluated changes in the CP3R measures using a before and after cohort study design. A control hospital was selected for each MCCAN hospital, matched using a prespecified, objective algorithm. This algorithm included dividing the MCCAN hospitals into two groups: hospitals located in an Appalachian area of the state and those located in a non-Appalachian area. The Appalachian area of Kentucky is primarily rural, with high rates of poverty, low educational attainment, and limited access to health care (7,8,9). These two groups were further divided by whether the MCCAN hospital was in a county with a population smaller than 50,000 or in a county with a population of 50,000 or more. Each MCCAN hospital was then matched to a control hospital in the same subgroup that also had the closest number of licensed acute-care beds and analytic cancer cases. In each control hospital, the proportion of cancer patients treated according to the CP3R quality measures was evaluated during the same 3-year period before its matched MCCAN hospital joined the Network and the same 3-year period after its matched MCCAN hospital joined the Network.

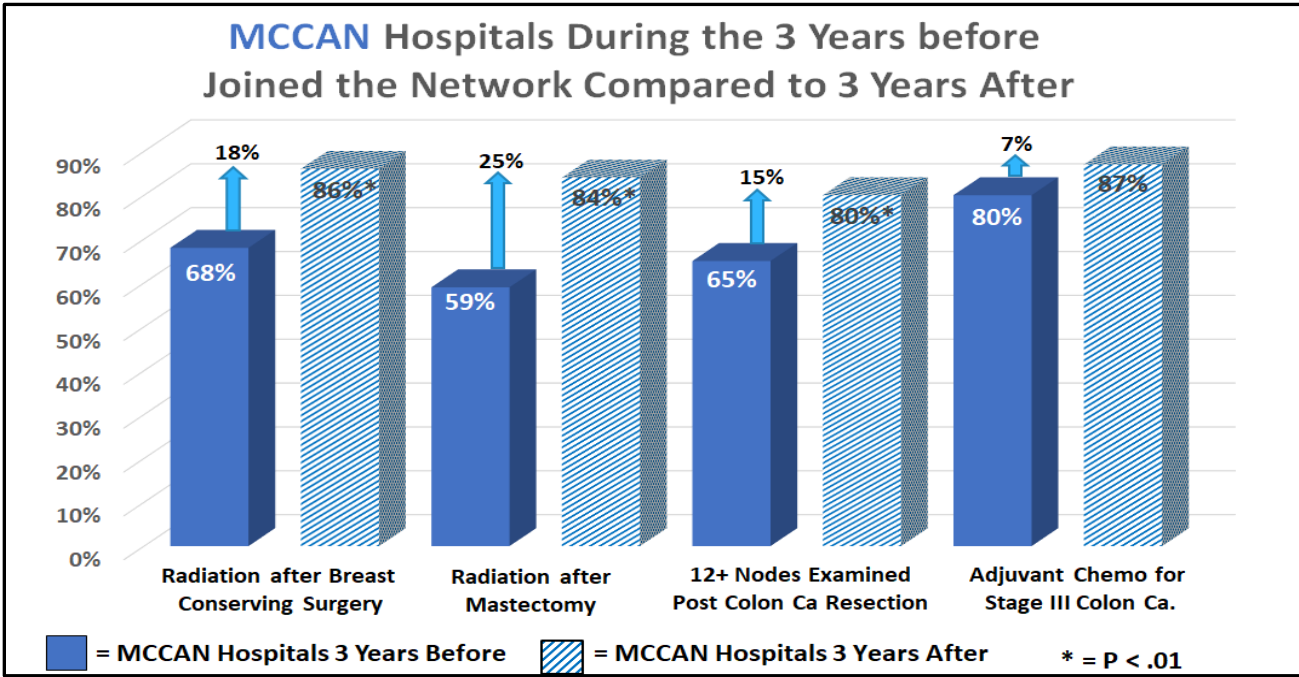|	Time Period 1 (T1)	Time Period 2 (T2)
Each MCCAN Hospital	**3 Years before Joining the Network**	**3 Years After Joining the Network**
Each Matched Control Hospital	**Same 3 Years as matched MCCAN Hosp.**	**Same 3 Years as matched MCCAN Hosp.**

Prior to joining the Network, the average number of cancer patients treated annually, the average number of acute care beds, and the average county population where each hospital was located were not significantly different between the MCCAN and matched control hospitals. There were also no significant differences in the number of MCCAN hospitals (3) and matched control hospitals (2) accredited by the CoC. In addition, during the three years before joining the Network, the matched control hospitals had significantly higher rates of compliance with two of the CP3R measures (BCSRT and 12RLN) and there was no significant difference in the compliance rate for the other two measures (MASTRT and ACT).

However, during the 3 years after the MCCAN hospitals joined the Network, the rate of compliance among the MCCAN hospital was significantly higher for three of the measures BCSRT (85.7%), MASTRT (83.6%) and ACT (86.8%) compared to the matched control hospitals (77.3%, 66.0%, and 74.0%, respectively).

MCCAN Vs Control Hospitals During the 3 Years After Each MCCAN Hospital Joined the Network

Radiation after Breast Conserving Surgery: MCCAN 86%*, Control 77%
Radiation after Mastectomy: MCCAN 84%*, Control 66%
12+ Nodes Examined Post Colon Ca Resection: MCCAN 80%, Control 84%
Adjuvant Chemo for Stage III Colon Ca.: MCCAN 87%*, Control 74%

■ = MCCAN Hospitals ■ = Matched Control Hospitals * = P < .05

Compliance with all four CP3R quality measures also increased substantially during the 3 years after the MCCAN hospitals joined the Network compared with the 3 years before they joined the Network. BCSRT increased by 17.5%, MASTRT increased by 24.7%, and 12RLN increased by 15.1%. All these changes were statistically significant. ACT also increased by 7%. However, this was not a statistically significant change.

MCCAN Hospitals During the 3 Years before Joined the Network Compared to 3 Years After

Radiation after Breast Conserving Surgery: Before 68%, After 86%*, 18%
Radiation after Mastectomy: Before 59%, After 84%*, 25%
12+ Nodes Examined Post Colon Ca Resection: Before 65%, After 80%*, 15%
Adjuvant Chemo for Stage III Colon Ca.: Before 80%, After 87%, 7%

■ = MCCAN Hospitals 3 Years Before ▨ = MCCAN Hospitals 3 Years After * = P < .01

The matched control hospitals did not experience similar significant improvements in the compliance rates with the four CP3R measures during the three years after their matched MCCAN hospital joined the network. In fact, there was a decrease in the compliance rate for BCSRT among the control hospitals. One likely driver of

the improvements in compliance rates among the MCCAN hospitals is the requirement that all affiliate member hospitals pursue CoC accreditation. Only three (23%) of the MCCAN hospitals had CoC accreditation before joining the Network, and the matched control hospitals had a similar rate, with two CoC-accredited hospitals (15%). However, in the 3 years after joining the Network, all but one of the MCCAN hospitals (92%) had achieved CoC accreditation, whereas only one additional matched control hospital received accreditation (23%).

The improvements in the quality of care for breast and colon cancer patients treated in hospitals participating in MCCAN is remarkable and will likely contribute to improved survival and lower recurrence. This is indeed a significant public health success. However, it is important to note that none of this evaluation would have been possible without the algorithms developed by KCR to assess eligibility for and compliance with CoC CP3R quality measures.

SUSTAINING SUCCESS

As the CoC continues to establish new CP3R quality measures, the KCR will continue to develop algorithms to both identify patients entered into the Registry who are eligible for treatment according to the quality measures and determine whether they were treated according to these measures. As additional hospitals join the Network and are in the Network for longer periods of time, it will be possible for KCR to conducting similar evaluation studies on additional quality of cancer care measures that address different cancer sites. We would welcome the opportunity to share our experience developing these algorithms with other NPCR registries.

REGISTRY CONTACT INFORMATION
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