## BACKGROUND

- Distress is an important factor impacting how well patients follow the recommended quality of life, and mortality.
- The American College of Surgeons Commission on Cancer (CoC) has recommended cancer distress monitoring as a standard for all accredited programs since 2012, and was enforced in 2015.
- Many barriers or limitations were encountered in implementation of distress screening, including lack of staff, competing demands and staff turnover. However, noted in this area is not well studied.

This study is part of the L.A.U.N.C.H (Linking & Amplifying User-Centered Networks through Connected Health), which aims to address cancer distress for rural cancer patients through a broadband enabled intervention approach for patients, caregivers and healthcare providers.

## OBJECTIVES

- Investigate factors associated with the 45 day NCCN distress thermometer screening status.
- Examine the distress scores for female breast cancer patients.

## METHODS

- Study Population: Adult KY cancer patients treated at Markey Cancer Center (MCC) University of Kentucky since 2016 to 2019 were included. For the screening status analysis, the unit of analysis was a visit. For the distress score analysis, only female breast cancer patients with at least two visits were included. The unit of analysis was visit occurred within the first year of cancer diagnosis.
- The National Comprehensive Cancer Network (NCCN) distress thermometer was used to capture distress symptoms at the MCC.²
- For each visit, a screening status is assigned. Any visit occurred with 45 days of the previous screening was considered meeting the screening requirement (Yes); otherwise, the screening status is missing (No).
- The distress scores ranged from 0-10. The analysis was done by the 1st scores after cancer diagnosis and the highest score within the first year of diagnosis.
- A multilevel logistic regression was fitted to examine factors associated with the 45-day screening status. A longitudinal mixed model was utilized to identify factors associated with the distress scores within the first year of cancer diagnosis.

## RESULTS FOR SCREENING (SELECTED VARIABLES)

<table>
<thead>
<tr>
<th>Factors</th>
<th>Number</th>
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<th>No (%)</th>
<th>Yes (%)</th>
<th>P-value</th>
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## RESULTS FOR DISTRESS SCORE (SELECTED VARIABLES)

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<th>P-value</th>
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<tr>
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<td>51550</td>
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<td>Age Group</td>
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<td>18-60</td>
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<td>61-74</td>
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<td>Race/Ethnicity</td>
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<td>16.6%</td>
<td>3.5%</td>
</tr>
</tbody>
</table>

## DISCUSSION

- There are significantly variations of screening status among departments with the Hematology Program having the highest screening rates. Rural and Appalachian status were significant in the bivariate analysis but not in the multivariate analysis. Patients who traveled longer distance were more likely getting screened. Those with late stage diagnosis were least likely getting screened.
- No significant difference as found for the first distress score across various factors. Significant factors were found when examining the highest score in the first year (data not shown). The longitudinal model showed the distress scores had the highest value in the first month, and then decreased over time. Medicaid or young patients had significant higher distress scores. Neither rural nor Appalachian status impacted the score.
- The variation of missing screening by department is likely due to varying practices and available resources. Utilization of readily available electronic health assessment tools for distress has the potential to improve collection of important patient data. Understanding factors associated with distress scores could reduce barriers and improve practices in cancer patient care.
A COMMUNITY/CANCER REGISTRY, COLLABORATIVE EFFORT TO EVALUATE CANCER BURDEN IN A SOUTHEAST TENNESSEE, RURAL COMMUNITY

MA Whiteside
Tennessee Cancer Registry, Tennessee Department of Health, Nashville, TN, USA

Acknowledgements: The author would like to thank Dr. Fred Croom for providing valuable expertise in the use of ArcGIS software. In addition, the author acknowledges the generous grant support of the Centers for Disease Control & Prevention (CDC), Cooperative Agreement #5NU58DP006307. The views presented are those of the author and do not necessarily reflect the views of the CDC.

INTRODUCTION

Cancer is a group of more than 100 diseases characterized by the uncontrolled growth and proliferation of abnormal cells, and is the second leading cause of death in the US population. The lifetime risk of being diagnosed with invasive or in situ cancer in the U.S. during the period 2016-18 was 43%; therefore, almost half of Americans can expect to be diagnosed with cancer sometime during their lifetime.1

Disease Control & Prevention (CDC): “a greater-than-expected number of cancer cases that occurs within a group of people in a geographic area over a period of time.2” The Tennessee (TN) Dept of Health’s TN Cancer Registry (TCR) staff recently responded to a cancer cluster concern located in Altamont city in Grundy County. Local citizens organized the Grundy County Community Cancer Organization (GCCCO), a 501(c)3 organization, to tackle the cancer problem in collaboration with TCR staff.

METHODS

The GCCCO administers a Facebook page that allows local residents to volunteer cancer information about themselves, a family member, or acquaintance due to the concerns regarding the high number of cancers in the community. There were a total of 137 entries on the GCCCO list from the Facebook page that included the individual’s name, birth date, address information, and cancer type. TCR staff analyzed reports of cancer cases by census tract for the time period 2005-2016 for four counties located in south-central TN: Grundy, Marion, Warren, and Coffee. The census tract under study was #87061955000 (195500), which includes Altamont city in Grundy County. TCR staff searched the GCCCO list for cancer cases that fit the definition for 47 different forms of cancer and examined the distribution of these cancers by census tract in all study counties. Of the 47 different forms of cancer examined, TCR staff only included in the analysis those forms which had at least 3 incident cases during the study period. This analysis yielded the following results: 22 cancers had a zero count for the 12-year period; 10 cancers displayed a count of one; 5 cancers had a count of two; and, finally, 10 cancers had a count of 3 or more. After examining these cases, TCR staff selected the following six cancers for further analysis: lung, female breast, Non-Hodgkin Lymphoma, pancreas and liver. Age-adjusted incidence rates were calculated for the 6 cancers for all forms of cancer under study and then these rates were subjected to “hotspot analysis” using ArcGIS software (Environmental Systems Research Institute (ESRI)). Definition, hotspot analysis is a complex mapping and spatial statistical analysis technique used to identify clustering of events, such as cancer occurrence. For this study, hot spot analysis was performed using the Global Moran’s I statistic. Due to the large number of non-standard addresses—Highway Contract Routes (HCR), PO Boxes, and Rural Routes (RR)—an analysis using zip code level data was performed to avoid potential study bias introduced during census tract-level analysis. Almost 40% of Grundy County addresses could not be geocoded due to presence of non-standard addresses.

RESULTS

There was a total of 126 cancers diagnosed in #9550 during the 12-year period under study, or on average about 10-11 cases per year out of a population of 2770 as measured during the 2010 Census. Age-adjusted rates were calculated for all census tracts in the counties under investigation, but due to the small numbers involved, the age-adjusted rates cannot be presented other than in map form (see below). One can imagine that the 95% confidence intervals attached to those rates were quite wide and, in some cases, included a negative number. The age-adjusted rates were imported into Arc-GIS software to perform spatial autocorrelation followed by hot spot analysis. TCR staff originally attempted to map observed age-adjusted rates for all cancers combined for all census tracts in the four counties under study (see Figure 1 on page 3), but nearly 40% of all cases for Grundy County could not be mapped due to the large number of residences that do not have exact addresses because they are reported as post office boxes, rural routes, highway contract routes, etc. The substantial amount of missing street address data for Grundy County does not allow for the assignment of census tract for these 40% of cases and, therefore, greatly reduces the accuracy of this analysis. Note in the figure below, the low age-adjusted rates in the census tracts compared to what would be expected for Grundy County as a whole. It should be noted that Grundy County experienced during the 2014-2016 period the 16th highest overall cancer incidence rate, 498.5 cases/100,000 population, in TN among the 95 counties that make up TN. Identical maps were generated for each individual cancer and demonstrated similar results.

References available upon request.
Deep Understanding
A Multi-Process Methodology for Pathology Coding
Achieving Deep Understanding (DU) Using a Four-Stage Pipeline

Putting the Pieces Together

1. Guide the DU components and Create a Gold Standard (GS) of coded documents:
   - A tool-driven process for creating an automatic sample.
   - An automated process to read and classify the pathology reports.

2. Build a Language Model (LM):
   - A deep learning model is created which uses all the available reports.
   - This model is used to classify the reports.

3. Assemble a single processing system:
   - A single processing system is assembled using the DU components.
   - This system is used to classify the reports.

4. Assess the Findings
   - A comparison of the findings is made.
   - An accuracy analysis is performed.
   - A cross-validation analysis is done.

Deep Learning Methodology

Deep Learning Model Creation

- Choose a language model architecture such as a neural network.
- Train the model using a variety of datasets.
- Evaluate the performance of the model.
- Refine the model to improve its accuracy.

Deep Learning - 4-Digit Site codes confusion matrix

- Overall accuracy 93.7%
- 20 smallest Site classes show poor accuracies
- 9% of classes have an accuracy above 95%
- Overall classification error rate 8%
- 0.27% of reports classified as C38 Heart classified as C62 testis
- 0.23% of reports classified as C62 testis classified as C38 Heart
- 0.05% of reports classified as C61 cervix classified as C51 prostate
- No cross-gender sex organ misclassifications occur.

Comparing Results

- DU results published in 2018-19
- DU results not compared to any other methodology
- DU results are compared to the CTR results.

Limitations of use in Registries

- DU requires a large number of reports to train the model.
- DU may not be applicable in smaller registries.
- DU may not be applicable in specific medical specialties.

Deep Learning - 4-Digit Site codes confusion matrix

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Numerical Analysis

- DU results for California CR 2020-19
- DU results not compared to any other methodology
- DU results are compared to the CTR results.

Deep Understanding - A Monolithic Process Methodology for Pathology Coding

Single Process Deep Learning

- DU has a technical advantage over the traditional methods.
- DU uses a single process to classify the pathology reports.
- DU uses a single process to classify the pathology reports.
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Deep Learning - 4-Digit Site codes confusion matrix

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Comparative Results Analysis between DU and DL

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Comparative Results Analysis between DU and DL

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- DU results not compared to any other methodology
- DU results are compared to the CTR results.
BACKGROUND:

- Cancers in children/adolescents differ from those in adults with the former's emphasis on morphology and site and the latter's emphasis on site.  
  This study compared eight non-CNS solid invasive malignant tumors (renal, liver, bone, soft tissue, testes, ovary, thyroid, and melanoma) for differences in stage at diagnosis, sex, and histology between children/adolescents and adults.

METHODS:

- A database was created for the eight non-CNS invasive solid tumors diagnosed in Massachusetts residents from 2008-2017 and separated into two groups: children/adolescent aged birth (0) to 19 and adults aged 20 and older.
- Using the SEER Summary Stage variable, those cases diagnosed at either a local or regional stage (code=1 to 5) were classified as loco-regional and those diagnosed at a distant stage (code=7) were classified as distant. Cases with an unknown stage were excluded from stage analysis.
- Male and female cases were compared to determine which cancer sites had a higher percentage of the children/adolescents versus adult cases.
- The most common histologies of the different cancer sites were compared between the two groups.
- SAS version 9.4 was used to create the data and to do the chi-square analyses using \( p < .05 \) as the significant cutoff.

RESULTS:

- From 2008-2017, there were 60,803 cases of the above listed cancers, 911 (1.5%) among those 0-19 and 59,892 (98.5%) among 20+.
- Blastosomas comprised nearly 75% of renal and liver cancers among children/adolescents and almost 0% of adult cancers. Renal and liver carcinomas were significantly more prevalent among adults.
- Osteosarcoma and Ewing sarcoma represented a significantly higher percentage of bone cancers among children/adolescents compared to adults.

CONCLUSIONS:

- Although various cancers exist in both the children/adolescent and adult populations, there were significant differences in the stages of diagnosis for five of the cancers.
- For both renal cancer and melanoma, the ratio of females to males in children/adolescents was significantly higher compared to adult females.
- There were several significant differences in histology types between children/adolescents and adults which reflect known differences such as blastomas occurring in the very young and germ cell cancers in older children and adolescents.

Further analyses comparing survival and distant stage diagnosis between children/adolescents and adults will provide more data on this association.

1. CDC, Gershman S, MacMillan A, Nyambage J, Massachusetts Cancer Registry (MCR), Massachusetts Department of Public Health, Boston, MA

We acknowledge the Centers for Disease Control and Prevention under cooperative agreement 5 NU58DP006271-03-00 and the National Cancer Institute under contract HHSN261201800008I awarded to the Massachusetts Cancer Registry at the Massachusetts Department of Public Health. The contents of this poster are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention or the National Cancer Institute.
BACKGROUND

- Worldwide, leukemia remains one of the leading causes of cancer morbidity and mortality. In Puerto Rico, leukemia is the 9th most common cancer with an incidence rate of 10.2 per 100,000 population and the 8th leading cause of cancer related death with a mortality rate of 4.1 per 100,000 population.
- Chronic lymphocytic leukemia (CLL) and acute myeloid leukemia (AML) are the most frequent types of leukemia among the elderly population.
- During the past decades, novel biomarkers have changed the way physicians treat leukemia patients and assign targeted therapies.
- Cytogenetic analysis of AML and CLL has become essential for disease diagnosis, classification, prognostic stratification, and treatment guidance.
- For CLL, the most reliable molecular prognostic markers offered in routing diagnostic tests are the immunoglobulin heavy chain variable (IgHV) gene mutational status and those detected by the fluorescence in situ hybridization (FISH) technique.
- For AML, the polymerase chain reaction (PCR) is one of the most sensitive techniques to screen for many common translocations and to detect leukemic cells during and after treatment.
- Today, no study has evaluated the use and impact on these prognostic factors for CLL or AML in Puerto Rico, a Hispanic aging population.

PURPOSE

- To assess the use of CLL and AML biological and genetic markers and estimates their prevalence in Puerto Rico.

METHODS

- The Puerto Rico Central Cancer Registry (PRCCR) developed the Puerto Rico CLL/AML Population-Based Registry software and database in order to add data that is not collected systematically by the PRCCR.
- The study population consisted of cases reported to the PRCCR between January 1, 2011 and December 31, 2015 with a diagnosis of CLL and AML.
- Data were stratified by sex, age groups, Health Region, history of previous cancer, health insurance type, and the modified Charlson’s comorbidity index.
- Logistic regression models were used to examine factors associated with the receipt of the most relevant testing. For CLL, we examine the factors associated with the performance of FISH to identify genetic abnormalities and IGHV testing. For AML, we examined the factors associated with the performance of PCR.

RESULTS

- Description of cohort by leukemia subtype: Puerto Rico, 2011-2015

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<th>Characteristics</th>
<th>CLL (N = 518)</th>
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<td>Age Group</td>
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<td>≥75 14.8%</td>
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<td>Marker Sensitivity Index</td>
<td>Normal 30.7%</td>
<td>Abnormal 69.3%</td>
</tr>
</tbody>
</table>

- Biological markers distribution in CLL and AML

- Adjusted odd ratios (AOR)

<table>
<thead>
<tr>
<th>Factors associated with performing FISH Tests in CLL Patients</th>
<th>Factors associated with performing PCR in patients with AML</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Male 1.00</td>
</tr>
<tr>
<td>Age</td>
<td>&lt;50 1.00</td>
</tr>
<tr>
<td>Marker Sensitivity Index</td>
<td>Normal 1.00</td>
</tr>
<tr>
<td>Characteristic</td>
<td>CLL/AML</td>
</tr>
<tr>
<td>Age</td>
<td>Male 1.00</td>
</tr>
<tr>
<td>Sex</td>
<td>Female 1.00</td>
</tr>
<tr>
<td>Marker Sensitivity Index</td>
<td>Normal 1.00</td>
</tr>
</tbody>
</table>

DISCUSSION

- Medical care treatment for patients with CLL and AML has been improved due to better understanding of the biological and genetic markers, particularly in improvements in diagnosis, prognosis, and monitoring of these patients.
- Our findings show that despite the importance of genetic testing as a key tool to evaluate and guide treatment decisions in patients with CLL and AML, testing was not performed consistently among patients diagnosed in Puerto Rico.
- This analysis shows the potential of the Puerto Rico CLL/AML Population-Based Registry database to estimate and monitor the pattern and trends of use of these biological markers to guide treatment decisions and monitor outcomes among patients with CLL and AML in Puerto Rico.
- Our findings highlight the importance of testing for prognostic genetic markers for all patients with CLL and AML and suggests the need for increasing awareness and knowledge regarding the value of this genetic information at time of diagnosis.
- FISH testing to identify genetic abnormalities has proved to be relevant in the assessment of prognosis of patients with CLL. However, our findings show that older patients with CLL are less likely to undergo FISH testing, which is important to determine treatment modalities.
- For patients with AML, no statistical association was found between the predictors and undergo PCR testing (p=0.05).
- The databased developed for this project proved to be an invaluable resource to characterize and monitor the pattern of use of biological and genetic markers for CLL and AML in Puerto Rico.

ACKNOWLEDGEMENT

- This work was supported by a federal grant from the National Program of Central Cancer Registries (NPCR Award Number NUS8DP0056318) to the Puerto Rico Central Cancer Registry at the UPR-Comprehensive Cancer Center.
Central Nervous System (CNS) tumour incidence rates in Canada over five years between 2013 and 2017

Farzana Yasmin1, Emily Walker2, Yan Yuan3, Faith Davis4,
The BTRC Surveillance Research Collaboration Group and PHAC Analytical Support Team
1 School of Public Health, University of Alberta

Introduction

The Brain Tumour Registry of Canada was established in 2016 to address the lack of data on Central Nervous System (CNS) tumours in Canada. We present one of the most comprehensive reports on all primary CNS tumours diagnosed among Canadians (excluding Quebec) from 2013-2017.

Methods

- Data on all primary CNS tumours were obtained from the Canadian Cancer Registry.
- International Classification of Diseases for Oncology (3rd edition) site/histology codes were grouped into histological categories according to the schema developed by the Central Brain Tumor Registry of the United States (CBTRUS).
- Age-standardized incidence rates (ASIR) were calculated per 100,000 person-years,##.
- Direct standardization method was used with the 2011 Canadian and 2000 U.S standard population.
- ASIR and 95%CI are presented by histology, behaviour, age, sex, and geographic region.

Results

The primary CNS tumour incidence estimates are based on approximately 20,706 CNS tumours diagnosed in 28,490 Canadians (excluding Quebec) between 2013 and 2017.

The ASIR for all CNS tumours increased with age.
- Age 0-14 (children) years, ASIR: 4.99 (95%CI:4.70-5.29)
- Age 15-39 (AYA) years, ASIR: 8.71 (95%CI:8.44-8.98)
- Age 40+ (Adults) years, ASIR: 34.63 (95%CI:34.20-35.07).

The ASIR for all primary CNS tumours was similar across sex (male: 20.73, 95%CI:20.38-21.07 and female: 21.40, 95%CI:21.07-21.74).

However, they differed by histology and males had higher rates of neuroepithelial tumours.

Females had higher rates of tumours of the meninges.

The ASIR for all primary CNS tumours is lowest in Newfoundland and Labrador (13.14; 95%CI:11.86-14.53) and highest in Ontario (24.72; 95%CI: 24.36-25.09).

The ASIR for malignant CNS tumours is lowest in Manitoba (7.43; 95%CI: 6.77-8.13) and highest in Ontario (8.16; 95%CI: 7.95-8.37).

The ASIR for non-malignant CNS tumours is lowest in Newfoundland and Labrador (5.26; 95%CI:4.46-6.18) and highest in Ontario (16.56; 95%CI:16.27-16.87).

Conclusion

- We present one of the most comprehensive data on CNS tumours available among Canadians.
- ASIR rates for malignant tumours are similar across provinces.
- ASIR rates for non-malignant CNS tumours indicate an underestimation of non-malignant CNS tumours.
- These data suggest Canadian key stakeholders need to continue to improve methods for capturing of non-malignant brain tumours in population registries.
Medical records are an extremely rich source of information and have tremendous value in cancer research. Nevertheless, the process of obtaining and abstracting medical records for a long-term follow-up study is complicated, time-consuming, and resource-intensive. Our three-member team abstracted approximately 25,000 pages of medical records for 93 patients, as a part of a retrospective 5-year follow-up study involving lung cancer survivors in New Jersey. We obtained these charts from 150 facilities and 111 physicians following HIPAA compliant procedures, and then meticulously reviewed this unstructured data. This presentation describes the observations and challenges during this process, which we hope will provide helpful guidance for any future studies with a similar design.

The medical records were obtained as a part of data collection for the study "Identifying Racial Disparities in Follow-up Care in a Diverse Population of Lung Cancer Survivors," also called the "Diversity Study." The purpose of this study was to measure any racial differences in receipt of post-treatment follow-up care in lung cancer survivors. The other sources of information for the study data included SEER DMS, and patient-administered surveys (Table 1).

Medical Records and SEER DMS

- Completeness of Electronic Medical Record (EMR) systems - Ensuring complete medical records is challenging
- EMR landscape in healthcare is complex and is subject to continuous and rapid changes. The providers use a myriad of EMR systems with diverse configurations. This widely varied system of medical record repositories makes it difficult for researchers to determine if all required medical charts from all years of follow-up for a particular patient have been received.
- Obtaining Medical Records specific to the study objectives needs careful determination
- Medical records contain different sets of information depending on their source, such as general hospitals, specialty centers, primary care providers or subspecialty clinics. Determination of the sources that are best for the study objectives might require early abstraction and careful analysis of the first few records that are received.
- Inconsistent medical terminologies and extensive use of free text by MDs
- The use of inconsistent medical terminologies by different providers complicates the conversion of unstructured text into categorical data. These include receiving incomplete charts, inaccurate coding, and missing important information during abstraction. It is recommended that the staff is appropriately trained to obtain and abstract data, firm data auditing procedures are employed, and sufficient time and human resources are allocated in order to collect quality data to achieve the research objectives.

Recommendations

- Source of research data:
  Different sources of research data such as medical records from various providers, registry data, and survey questionnaires, will provide different sets of information. This source that is best suited for the study objectives should be determined early on in the study.
- Abstractors training
  To have consistency in the abstraction procedures, all staff should receive sufficient training from an experienced abstractor before starting the process.
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- Abstractors training
  To have consistency in the abstraction procedures, all staff should receive sufficient training from an experienced abstractor before starting the process.
- Data abstractor audit
  A good tracking system for the abstracted elements might be required to ensure data integrity.
- Data quality control measures
  More than one abstractor should separately review some or all charts depending on the available research resources.
- Pilot study
  A smaller pilot study, with 50 to 100 patients, is strongly recommended to evaluate the required resources before any large-scale study is conducted.

Conclusion

Despite being a rich source of information, several factors can affect the data collection process from medical records, and thus bias the research results. These include receiving incomplete charts, inaccurate coding, and missing important information during abstraction. It is recommended that the staff is appropriately trained to obtain and abstract data, firm data auditing procedures are employed, and sufficient time and human resources are allocated in order to collect quality data to achieve the research objectives.
Childhood Cancer Records in an Agrobusiness Region of South Brazil

Authors: Jane Kelly Oliveira Friestino, Marcelo Moreno, Vander Monteiro da Conceição, Patricia Carla Lima, Gilnei Filler Soares, Priscila Maria Stolzes Bergamo Francisco

BACKGROUND

Between 2020 and 2022, it is estimated that there will be 8,460 new cases of childhood cancer in Brazil. By 2020, it was expected that South Brazil will present the highest incidence of childhood cancer, with a gross rate of 165.27 cases per million.

METHODS

Used to collect data was made by medical records from the patients attended during the first year of pediatric oncology care. All pediatric cancers were further classified according to the ICCC (International Classification for Childhood Cancer third Edition. The ethical committee approved this Project.

RESULTS

The most common cancers among the pediatric group were leukemias/lymphomas followed by CNS-intracranial neoplasms. The cancer registry was very important to consider the future plans for oncological health, specific to this region.

CONCLUSION

During the 2016, 22 cancer cases which were registered. Among all these subtypes, all cancers showed female predominance. 59% were female cases and 40% were male. The predominant age group of the start of treatment was 10-14 years old, (31.8%).

The most common cancers among the pediatric group were leukemias/lymphomas followed by CNS-intracranial neoplasms. The cancer registry was very important to consider the future plans for oncological health, specific to this region.

As of 2015, the pediatric oncology ward was inaugurated at the Children’s Hospital of Augusta Müller Bohner, with services of clinical oncology, surgical oncology, chemotherapy, hematology and radiotherapy, for the age group from 0 to 18 years. The hospital is a reference for approximately 1.5 million inhabitants. The hospital does not have a Hospital Cancer Registry Federal University of Fronteira Sul, the systematization of registry data has started, including the possibility of producing population-based information for the region.

Agribusiness economy is based on family farming. It is known that more than 82% of these properties make use of pesticides, a rate significantly higher than the national average of 33%.

Leukemia 32%
Other 22%
CNS-intracranial neoplasm’s 23%
Lymphoma 23%

The objective was to study the profile of childhood cancers registered in Children’s Hospital of Augusta Müller Bohner during the first year of pediatric oncology care.

OBJECTIVE

CONCLUSION

CONTACT

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Mobile: +55 49 999114624

Figure 1 – Chapecó’s location in Santa Catarina and in Brazil.

Source: https://doi.org/10.4000/confins.9646.
Colorectal cancer (CRC) is the third most commonly diagnosed cancer in both men and women in the United States (U.S.) and in New Jersey. Compared to the U.S. average, New Jersey has a slightly higher incidence of CRC (40.8 vs. 38.4 per 100,000; 2013-2017). CRC mortality rates in New Jersey are the same as the U.S. average (13.7 per 100,000; 2014-2018).

The links between diet, weight, and exercise and CRC are among the strongest for any type of cancer. Based on a meta-analysis, in the U.S., individuals with a high body mass index (BMI) were 46% more likely to develop CRC compared to those with normal BMI values (pooled RR of 1.465 (95% CI, 1.325–1.619)), and those with the highest vs lowest category of waist circumference had a 61% higher risk of CRC (pooled RR of 1.612 (95% CI, 1.465–1.765)).

Smoking is also a modifiable risk factor for CRC. A large prospective cohort study found that long term cigarette smoking was associated with an increased risk of CRC. The greatest risk was among current smokers with at least 50 years of smoking, who have a 38% increase in CRC risk compared to never-smokers (hazard ratio: 1.38 (95% CI, 1.04–1.84)).

Over the past two decades, a subtle yet steadily significant increase in CRC incidence can be seen for younger adult (20-49) men (+1.16% per year; 1995-2014) and women (+1.46% per year; 1995-2014) in New Jersey.

Due to this trend, the American Cancer Society has lowered the recommended screening age for CRC from 50 to 45.
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Acknowledgements

Data were collected by the New Jersey State Cancer Registry under contract HHSN 75N1021100009 and control No. 75N1021100001 from the Surveillance, Epidemiology, and End Results Program of the National Cancer Institute, and under cooperative agreement 5NU58DP006279 from the National Program of Cancer Registries of the National Cancer Institute, and under cooperative agreement contract HHSN 75N91021D00009 and control No. 75N91021F00001 from the Surveillance, Epidemiology, and End Results Program of the National Cancer Institute, and under cooperative agreement 5NU58DP006279-04-00 from the National Program of Cancer Registries, Centers for Disease Control and Prevention, in addition to funding from the State of New Jersey, and the Rutgers Cancer Institute.

Presented at the NAACCR Annual Conference, June 15-17, 2021

CONCLUSIONS

Despite the declining trends in colorectal cancer (CRC) statewide, there are at least a third (35%) of New Jerseyans who are not up-to-date with CRC screening. CRC incidence, and the prevalence of obesity and smoking is higher in men compared to women in New Jersey. Area deprivation and CRC incidence are higher in South Jersey compared to North Jersey.

Substantial geographic variation in CRC incidence and key risk factors in New Jersey are evident. Although South Jersey has the highest incidence rates of CRC, several northern counties are at increased risk including Warren County which is among the northern counties with the highest proportion of late stage CRC, highest smoking prevalence, and is among the counties that have high proportions who are not up-to-date with screening, particularly women. In the south, Salem is one of the counties with a high ADI, high obesity prevalence, highest smoking prevalence among men, higher proportion of late stage CRC compared to the state among women, and is among the counties with the highest proportion of men who are not up-to-date with their CRC screening. Cumberland County, which has the greatest socioeconomic deprivation and the highest incidence among men (and one of the highest among women), also has the highest percentage of men who are not up-to-date with CRC screening.

Counties with the lowest area deprivation (or high socioeconomic status) are the same counties with some of the lowest incidence rates (Morris women), prevalence of smoking (Somerset men), obesity (Bergen men and Hunterdon, Morris, and Monmouth women), and proportion of individuals who are not up-to-date with CRC screening (Hunterdon men).

These findings are consistent with previous research. These data provide evidence to inform cancer control programs that focus on cancer screenings, tobacco cessation, and healthy lifestyle promotion.
BACKGROUND AND PURPOSE

Data presentation is an important consideration for cancer registries. Level of detail and visual appeal are both important factors. The purpose of this project was to produce a data report and a one-page visual flyer for the Colon Cancer Coalition that describes colorectal cancer in Massachusetts. Primary goal for the flyer was to design a visually appealing product to maximize data communication as well as to distribute at the Colon Cancer Coalition Walks.

METHODS

Descriptive data on colorectal cancer in Massachusetts were summarized for 2012-2016 by the following: 1) incidence and mortality rates by race/ethnicity and age; 2) jointpoint regression for long term trends (1997-2016); 3) comparisons to national rates; 4) BRFSS colorectal cancer screening data.

A contracted vendor was hired to produce the data report and flyer.

SELECTED GRAPHS/TABLES FROM DATA REPORT

TRENDS

Incidence rates decreased significantly by 4.0% for men and 3.1% for women each year.

For those aged 49 years or less, incidence rates increased by an average of 2.2% each year.

RACE/ETHNICITY

Percentage of cases under age 50 for each individual group: White non-Hispanic 10.4%, Black non-Hispanic 17.6%, Asian non-Hispanic 18.6%, Hispanic 24.0%.

The highest incidence rates were among Black, non-Hispanic, followed by White, non-Hispanics, Asian, non-Hispanics, and Hispanics.

The highest mortality rates were among Black, non-Hispanic followed by White, non-Hispanics, Hispanics and then Asian, non-Hispanics.

The highest mortality rates were Hispanic 10.4%, Black non-Hispanic 17.6%, Asian, non-Hispanic 18.6%, Hispanic 24.0%.

RESULTS

Table 4. Percentage of new colorectal cancer cases by stage at diagnosis, Massachusetts, 2012–2016

<table>
<thead>
<tr>
<th>Stage at Diagnosis</th>
<th>All Ages</th>
<th>Individuals Ages 49 Years or Less</th>
<th>Individuals Ages 50 Years or More</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local (confined to organ where it began)</td>
<td>40.6%</td>
<td>37.3%</td>
<td>41.0%</td>
</tr>
<tr>
<td>Regional (spread to some nearby areas)</td>
<td>33.7%</td>
<td>35.6%</td>
<td>33.9%</td>
</tr>
<tr>
<td>Distant (spread to other parts of the body)</td>
<td>10.8%</td>
<td>25.2%</td>
<td>19.2%</td>
</tr>
<tr>
<td>Unknown (stage is not assigned)</td>
<td>5.8%</td>
<td>1.9%</td>
<td>6.3%</td>
</tr>
</tbody>
</table>

Advantages of In-Depth Report
- Allows for more granular data
- Allows for greater content including explanations and interpretations of data presented.

Disadvantages of In-Depth Report
- Message gets lost in detail
- Harder to absorb and remember key points
- More labor intensive

Screening

A significant increase in the percentage that met screening guidelines each year was observed among White, non-Hispanics and Hispanic adults. The numbers among Asian non-Hispanics were insufficient to calculate a percentage.

IMPLICATIONS/CONCLUSIONS

Producing an in-depth report with an accompanying visualization gives the best of both worlds - detail when needed and a simpler presentation of data. Data that are better received and comprehensible might provide greater motivation for action.
Developing the Puerto Rico Multiple Myeloma and Myelodysplastic Syndromes Population-Based Registry

Tonatiuh Suárez Ramos, Karen I. Ortiz-Ortiz, Carlos R. Torres-Cintrón, Mariela Alvarado Ortiz, Maira A. Castañeda Ávila, Guillermo Tortolero-Luna

Background
- Multiple myeloma (MM) and myelodysplastic syndromes (MDS) are hematological conditions with a wide range of clinical manifestations and outcomes.
- In Puerto Rico (PR), there is scarce information concerning the clinical characteristics, treatment patterns, and outcomes related to both conditions.
- With a multidisciplinary team, we proposed a new population-based project of MM and MDS leveraging clinical data, gathered by pathological reports with health insurance claims data and Electronic Medical Record (EMR).

Objective
- To develop the MM and MDS Population-Based Registry in PR in order to:
  o Describe the epidemiologic characteristics
  o Estimate the prevalence of mutations and translocations
  o Examine the patterns of care among MM and MDS patients.

Methods
- The date of last contact of patients will be updated using follow-up pathology reports while patients’ vital status will be updated with information from the mortality files provided by the Demographic Registry of Puerto Rico.
- A match with PRCCR-Health Insurance Linkage Database (PRCCR-HILD) will be performed to obtain the pattern of care of MM and MDS patients.
- We propose to conduct active follow-up, as needed, for those cases through physicians, hospitals, images centers, and other reporting facilities.
- Additional information can be obtained through EMR for those physician who have it.

Results
- Using the PRCCR’s cancer database, EMR, Pathology Reports database, and PRCCR-HILD, we created a solution in Visual Studio to manage MM and MDS-related variables.
- A tumor registrar was kept in charge of capturing the complete diagnosis and treatment information of patients with MM and MDS, including the necessary tumor markers.
- A manual review is performed periodically to evaluate the potential true matches between these databases.
- We summarized demographic characteristics, clinical data, treatment, healthcare utilization, and comorbidities.

Conclusions and Future Plans
- The MM and MDS Population-Based Registry expands the quality and quantity of data regularly collected by the PRCCR by including additional clinical and genetic characteristics.
- It allows us to estimate the prevalence of the most common mutations and translocation of MM and MDS and compare it to the National Comprehensive Cancer Network (NCCN) guidelines.
- This study will provide complementary information on these conditions and related morbidities among the Hispanic populations to support future scientific publications.
- This database will be used to monitor and assess MM- and MDS-related health outcomes in PR.

This work was supported by a federal grant from the National Program of Central Cancer Registries (Grant # 6 NU58DP006318) to the Puerto Rico Central Cancer Registry at the UPR-Comprehensive Cancer Center.
Distant recurrence in women with early breast cancer and the prevalence of metastatic disease: A systematic review and meta-analysis

Eileen Morgan1, Colette O'Neill2, Aude Bardot1, Paul Walsh2, Isabelle Soerjomataram1, Melina Arnold1

1Section of Cancer Surveillance, International Agency for Research on Cancer, Lyon, France, 2National Cancer Registry Ireland, Cork, Ireland.

Background
• To-date, there are no population-based data on the prevalence of metastatic breast cancer (MBC).
• According to previous evidence, about 20-30% of all women initially diagnosed with early breast cancer develop MBC later during a disease relapse or recurrence.
• Distant recurrence rates and the prevalence of distant MBC, including women with de novo metastatic disease at initial diagnosis and those who developed MBC because of disease recurrence, are largely unknown.

Methods
• Relevant studies published since 2010 were identified from a systematic search of MEDLINE and Web of Science.
• Exclusion of studies that included other cancer sites/diseases, in-situ breast cancer, second primaries or randomised clinical trials
• Extraction of data on recurrence prevalence and rates of distant metastatic disease, information on follow-up time, treatment, age, stage at diagnosis, site of metastasis and breast cancer subtype is ongoing.
• Data analysis and assessment of risk of bias of all included studies is ongoing and meta-analyses will be conducted where feasible.

Aims
• The aim of this study was to conduct a systematic literature review and meta-analysis to determine distant recurrence rates in women initially diagnosed with early (M0) breast cancer.

Results
• In total, 7,815 publications were identified and screened for eligibility by three independent reviewers; 1,279 studies underwent full text screening and data from a total of 414 studies are being extracted.
• Initial results show that proportions of distant recurrence were higher in hospital-based studies compared to studies that identified patients through population-based cancer registries.
• Differences in recurrence rates and time to recurrence were also observed by disease subtype.

Conclusion & Next Steps
• Upon completion of the data extraction phase, results will be stratified by disease subtype, stage at diagnosis and data source to compare between hospital/institution and population-based cancer registry data.
• Insights from this study will increase our understanding of MBC prevalence on the population level.
• The quantification of recurrence and disease progression is important to assess the effectiveness of treatment, evaluate prognosis and allocate resources.

For more information or questions, please contact:
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Funding
Susan G. Komen Foundation
Do Modifiable Risk Factors Impact Pancreatic Cancer Survival in a Population-Based Study after Adjusting for Clinical Factors?

Mei-Chin Hsieh, PhD, CTR;1 Lu Zhang, PhD;2 Cruz Velasco-Gonzalez, PhD;3 Yong Yi, PhD;4 Lisa A. Pareti, BS, CTR;1 Edward J. Trapiro, ScD, FACE;1 Vivien W. Chen, PhD;1 Xiao-Cheng Wu, MD, MPH, CTR1

INTRODUCTION

Several modifiable risk factors (MRFs) including diabetes, smoking, and BMI are related to emerging pancreatic cancer. Epidemiological studies show that these MRFs also escalate mortality. Population-based studies assessing the impact of these MRFs on pancreatic cancer survival were limited. Studies which assessing these associations mainly controlled for sociodemographic factors only and showed inconsistent findings.

OBJECTIVES

1) To examine the impact of diabetes, smoking status, and BMI on pancreatic cancer survival.
2) To compare estimated survival rates among adult pancreatic cancer patients stratified by MRFs.
3) To measure the population attributable risk (PAR) of these MRFs on survival outcome of pancreatic cancer patients.

METHODS AND MATERIALS

Data Source and Study Population

Data on pancreatic cancer patients diagnosed from 2011 to 2017 were queried from the Louisiana Tumor Registry (LTR). The eligibility criteria included pancreatic cancer patients aged 20 years and older with stage I-IV disease.

Modifiable Risk Factors

Diabetes mellitus data was retrieved from the patient's comorbid condition(s) and supplemented with statewide Hospital Inpatient Diagnostics Related Groups (HIDRGs) 2010-2018 to obtain the complete information. Cigarette smoking, height, and weight were abstracted directly from medical charts at the time of cancer diagnosis.

Sociodemographic and Clinical Variables

Race, age, marital status, insurance, census tract poverty, stage, grade, treatment, and CCI score were included in the adjusted model.

Survival

Survival duration was defined as the time between the initial diagnosis date and the CS death date or end of follow-up, December 31, 2019 if alive. Patients died in non-CS cause were censored.

RESULTS

Conclusions

This study observed that diabetes and smoking contributed substantially to the reduction of pancreatic cancer survival after adjusting for sociodemographic and clinical factors; however, only BMI ≥35 was observed to increase risk of mortality among stage III-IV patients. Advocacy and education on healthy lifestyle choices for the general population are imperative for cancer prevention and a favorable prognostic outcome.

ACKNOWLEDGMENTS

This work was supported in part by Louisiana State University Health Sciences Center, the Centers for Disease Control and Prevention under cooperative agreement of the National Program of Cancer Registries grant number NU58DP003332, and the National Cancer Institute’s contract number HHSN261201800071.
Documenting liver cancer burden across San Francisco neighborhoods

Janet N. Chu, MD, MPH1,2,4; Debora Oh, MSc, PhD3,4,5; Daphne Lichtensztajn, MD, MPH4; Allison J. Canchola, MS3,4,5; Scarlett L. Gomez, PhD, MPH2,3,4,5; Tung T. Nguyen, MD1,2

1. Department of Medicine, University of California San Francisco (UCSF); 2. Asian American Research Center on Health; 3. Department of Epidemiology and Biostatistics, UCSF; 4. DREAM Lab, UCSF; 5. Greater Bay Area Cancer Registry

BACKGROUND
Liver cancer
- While overall cancer rates are declining in the U.S., liver cancer incidence has more than tripled since 1980, making it the fastest rising cancer in the U.S.
- Liver cancer is the 5th and 7th leading cause of death among men and women, respectively
- Communities of color have higher liver cancer incidence and mortality
- Higher liver cancer incidence has been seen among persons living in ethnic enclaves and lower socioeconomic status (SES) neighborhoods

Objective
- Identify neighborhoods in San Francisco that are disproportionately affected by liver cancer

METHODS
Data
- Data from the California Cancer Registry, U.S. Census, American Community Survey
Inclusion criteria
- Resident of San Francisco City/County
- Age 18+ years
- Diagnosed with liver cancer as primary malignancy between 2008 – 2017

RESULTS
- 1,237 primary liver cancer cases were diagnosed between 2008 and 2017.
- We found neighborhood differences in liver cancer survival (Figure 1)
- Older individuals and those who are uninsured or publicly-insured had higher risk of death from liver cancer
- Overall survival after liver cancer diagnosis improved over time
- Zones are associated with liver cancer mortality, but this is attenuated by other sociodemographic factors

DISCUSSION
- Healthcare access is an important predictor of all-cause death among liver cancer cases in San Francisco
- While neighborhood zones and SES were not significantly associated with all-cause death, it may be that intervening at the neighborhood level once liver cancer develops is too late

NEXT STEPS
- Work with community partners to focus meaningful interventions in high-risk groups, particularly the uninsured
- Future studies should explore the role of neighborhood characteristics on liver cancer risk factors and prevention

Funding
- Funding for this work comes from the Asian American Research Center on Health, the California Department of Public Health, the National Cancer Institute, and the National Research Service Award fellowship training grant

Figure 1. Liver cancer survival at 5 years by zone

Figure 2. Adjusted hazard rate ratios (HR) for risk of 5-year all-cause death

Table 1: Adjusted hazard rate ratios (HR) for risk of 5-year all-cause death

<table>
<thead>
<tr>
<th></th>
<th>Minimally-adjusted* HR (95% CI)</th>
<th>Fully-adjusted HR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1.02 (1.02-1.03)</td>
<td>1.02 (1.02-1.03)</td>
</tr>
<tr>
<td>Female (ref. Male)</td>
<td>1.00 (0.83-1.19)</td>
<td>0.96 (0.80-1.16)</td>
</tr>
<tr>
<td>Year of Diagnosis</td>
<td>0.97 (0.94-0.99)</td>
<td>0.97 (0.94-0.99)</td>
</tr>
<tr>
<td>Race/ethnicity (ref. NH White)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NH Black</td>
<td>1.22 (0.95-1.57)</td>
<td>0.97 (0.77-1.22)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.97 (0.77-1.22)</td>
<td>0.84 (0.63-1.10)</td>
</tr>
<tr>
<td>NH AAPI</td>
<td>1.23 (0.63-1.44)</td>
<td>1.19 (1.02-1.33)</td>
</tr>
<tr>
<td>Marital Status (ref. Married)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unmarried</td>
<td>2.25 (1.41-3.59)</td>
<td>1.99 (1.48-2.71)</td>
</tr>
<tr>
<td>Health insurance (ref. Private)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uninsured</td>
<td>0.97 (0.73-1.30)</td>
<td>0.69 (0.46-1.17)</td>
</tr>
<tr>
<td>Any public insurance</td>
<td></td>
<td>0.91 (0.71-1.16)</td>
</tr>
<tr>
<td>nSES (ref. 9th–highest quintile)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st (lowest)</td>
<td>0.97 (0.73-1.30)</td>
<td>0.69 (0.46-1.17)</td>
</tr>
<tr>
<td>2nd</td>
<td>0.91 (0.71-1.16)</td>
<td>0.97 (0.77-1.22)</td>
</tr>
<tr>
<td>3rd</td>
<td>0.91 (0.71-1.16)</td>
<td>0.97 (0.77-1.22)</td>
</tr>
<tr>
<td>4th</td>
<td>0.91 (0.71-1.16)</td>
<td>0.97 (0.77-1.22)</td>
</tr>
</tbody>
</table>

* Adjusted for age, sex, year of diagnosis, and zone as a stratification variable.
Ethnic and racial differences in gastric cancer incidence in the US
Eunjung Lee, Juanjuan Zhang, Amie Hwang, Lihua Liu, Dennis Deapen
Los Angeles Cancer Surveillance Program, University of Southern California, Los Angeles, CA

Background
- Gastric cancer incidence in the US has dramatically declined over the past few decades. However, substantial ethnic and racial differences have been observed.
- It is thought that first generation immigrants from high-risk countries are at an increased risk.
- The Los Angeles Cancer Surveillance Program (CSP) has previously reported that Korean Americans (KA) have the highest gastric cancer incidence and Japanese Americans (JA) have the second highest incidence in the US using 1988-2012 California Cancer Registry data.
- South Korea and Japan have the highest gastric cancer incidence rates worldwide.
- In our earlier study, KAs had a more favorable stage distribution than other Californians but had a worse stage distribution compared to populations in Korea or Japan, where population-based screening is available.
- Stage distribution in JAs was not different from other Californians.

Objectives: To evaluate gastric cancer incidence in the US in 2011-2015 by racial/ethnic subgroup and by nativity (US-born vs. foreign-born) and examine tumor characteristics including stage at diagnosis, updating the results from our previous analysis.

Methods
- Database: California Cancer Registry data
- Foreign-born/US-born population was estimated using the American Community Survey Public Use Microdata Sample (PUMS) data.

Fig 1. Gastric cancer AAIR by race/ethnicity and nativity, California, 2011-2015.

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>US-born</th>
<th>Foreign-born</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>KA</td>
<td>30%</td>
<td>25%</td>
<td>28%</td>
</tr>
<tr>
<td>JA</td>
<td>20%</td>
<td>20%</td>
<td>18%</td>
</tr>
<tr>
<td>NHW</td>
<td>10%</td>
<td>10%</td>
<td>9%</td>
</tr>
</tbody>
</table>

- Abbreviations: AAIR, age-adjusted incidence rates; NHW, non-Hispanic white; NHB, non-Hispanic black
- AAIR: Age standardized to the US 2000 standard population
- Data suppressed when the case count in each subgroup is smaller than 15

Fig 2. Percentage of localized stage gastric cancer by race/ethnicity, California, 1988-2017

- Among patients with known stage
- Abbreviations: AAIR, adjusted standardized incidence rate; NHW, non-Hispanic white; NHB, non-Hispanic black
- AAIR: Age standardized to the US 2000 standard population
- Data suppressed when the case count in each subgroup is smaller than 15

Fig 3. Stage distribution by race/ethnicity and nativity, California, 2011-2015

Conclusions
- Bi-annual gastric cancer screening is now recommended in South Korea for adults aged 40 or above, with an estimated bi-annual screening rate of 73%, predominantly by upper endoscopy. Japan has similar screening recommendations starting at age 50.
- The US lacks well-defined gastric cancer screening guidelines. Screening endoscopy for Asian Americans, Hispanics and African Americans should be recommended, particularly for first-generation immigrants from high-risk countries.

Background

Studies examining the role of religion and spirituality on health have reported positive effects between religious involvement and a wide range of health outcomes. Existing research on religion and cancer has primarily focused on examining religion as a coping mechanism.

Research Question

Is there an association between religious affiliation and survival time among cancer patients?

Religious Affiliation

A higher proportion of women reported religious affiliation (59%) than men (47%). More than half (53.3%) reported religious affiliation, 5.6% had no affiliation, and 41.1% of unknown religious affiliation.

Table 1. Cancer-Specific Stage Distribution by Reporting of Religion, California Cancer Registry, 1988-2017

<table>
<thead>
<tr>
<th>Cancer Site</th>
<th>Summary Stage</th>
<th>Reporting of Religion</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=548,701</td>
<td>Localized</td>
<td>63.2</td>
<td>60.4</td>
</tr>
<tr>
<td></td>
<td>Regional</td>
<td>30.5</td>
<td>33.1</td>
</tr>
<tr>
<td></td>
<td>Distant</td>
<td>4.8</td>
<td>4.9</td>
</tr>
<tr>
<td></td>
<td>Unknown</td>
<td>1.5</td>
<td>1.6</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>CRC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=344,585</td>
<td>Localized</td>
<td>36.5</td>
<td>35.3</td>
</tr>
<tr>
<td></td>
<td>Regional</td>
<td>38.7</td>
<td>40.0</td>
</tr>
<tr>
<td></td>
<td>Distant</td>
<td>20.9</td>
<td>20.9</td>
</tr>
<tr>
<td></td>
<td>Unknown</td>
<td>3.9</td>
<td>3.8</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Cervix</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=43,880</td>
<td>Localized</td>
<td>52.9</td>
<td>47.0</td>
</tr>
<tr>
<td></td>
<td>Regional</td>
<td>32.5</td>
<td>36.6</td>
</tr>
<tr>
<td></td>
<td>Distant</td>
<td>11.2</td>
<td>12.4</td>
</tr>
<tr>
<td></td>
<td>Unknown</td>
<td>3.4</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Prostate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=644,109</td>
<td>Localized</td>
<td>72.0</td>
<td>71.5</td>
</tr>
<tr>
<td></td>
<td>Regional</td>
<td>16.1</td>
<td>15.3</td>
</tr>
<tr>
<td></td>
<td>Distant</td>
<td>7.1</td>
<td>7.6</td>
</tr>
<tr>
<td></td>
<td>Unknown</td>
<td>4.9</td>
<td>5.6</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 2. Cancer-Specific Multivariable Analysis of Mortality Hazard Ratios (HR)*, CCR, 1988-2017 (**p<.01; ***p<.001)

<table>
<thead>
<tr>
<th></th>
<th>Breast HR</th>
<th>Colorectal HR</th>
<th>Cervical HR</th>
<th>Prostate HR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>1(Ref)</td>
<td>1(Ref)</td>
<td>1(Ref)</td>
<td>1(Ref)</td>
</tr>
<tr>
<td>Yes</td>
<td>1.073***</td>
<td>1.026**</td>
<td>1.076*</td>
<td>1.031**</td>
</tr>
<tr>
<td>Unknown</td>
<td>1.008</td>
<td>0.979*</td>
<td>0.969</td>
<td>0.99</td>
</tr>
</tbody>
</table>

*By stage and religion: Adjusted by age, race/ethnicity, insurance status, socioeconomic status (low, middle, high), cancer-specific stage, and treatment (surgery only, chemotherapy, radiation, surgery+chemotherapy, unknown).

Conclusions

• Preliminary findings indicate a) slightly worse stage of disease at diagnosis and b) worse overall survival for patients reporting religious affiliation than those who did not.

• Our findings suggest that faith-based organizations may have a potential role to contribute to cancer control efforts, such as engage in promoting cancer screening and prevention.
Introduction

- Date of last contact (DOLC) is essential for computing cancer survival. A key measure of comparative effectiveness of treatment regimens and an important indicator of health inequity.
- Prior to 2020, the New York State Cancer Registry (NYSCR) had captured the DOLC from: facility reports, laboratory reports, linkages with state mortality files, the National Death Index, Social Security Administration files, and Medicare death information; and by requesting updates from facilities with large pediatric caseloads.
- Although the NYSCR has been able to meet SEER requirements for follow-up rate for patients age 20-64 (>90%) and 65+ (>95%) through the above-mentioned routine practices, we had not met the requirements for patients age < 20 (90%), nor for patients with in-situ tumors (90%). Vital records do not provide enough follow-up information for these patients due to their low mortality, and Medicare does not include any claims for most of the young patients.
- To improve the follow-up data for these two groups, the NYSCR was able to leverage our relationships with other administrative databases within the New York State Department of Health. By matching these cases with both state Medicaid and state hospital discharge data, we were able to meet SEER requirements for follow-up.

Methods

- We conducted two sets of linkages using deterministic matching methodology, one in January 2020 (2004-2016 diagnoses) and the other in October 2020 (2000-2017 diagnoses), using SAS 9.4. The initial linkages to Medicaid and discharge records were conducted for other purposes, and the improvement in follow-up was a positive unintended consequence. The subsequent linkages included more records and attained more complete follow-up.
- For the Medicaid linkages, patients were matched to enrollment files using first name, last name, birthdate, social security number, and sex. If all or a combination of any of these identifier items matched, the latest date of eligibility for the matched Medicaid enrollment was used to update the DOLC of each matched case.
- For linkage to discharge data, patients were matched using a unique personal identifier (consisting of partial last and first names and partial social security number), date of birth, sex, treating facility, medical record number and address at diagnosis. For each matched case, the latest date of discharge of the matched records was used to update the DOLC.

Acknowledgements: This work was supported in part by the Centers for Disease Control and Prevention’s National Program of Cancer Registries through cooperative agreement 6NU58DP006309 awarded to the New York State Department of Health and by Contract 75N91018D00005 (Task Order 75N91018F00001) from the National Cancer Institute, National Institutes of Health.

Results

- Through routine linkages, the latest follow-up dates were found for ~19% of pediatric patients.
- Before the January updates, the percentages of cases diagnosed 2000-2017 and followed through 2018 were below the SEER requirement (>90%) for both patients age < 20 (80.8%) and patients with in-situ tumors (87.4%).

Table 1. Cases diagnosed 2000-2017 followed thru 2018 before the January 2020 updates

<table>
<thead>
<tr>
<th>Age</th>
<th>Numerator</th>
<th>Denominator</th>
<th>Percent</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 20</td>
<td>13,060</td>
<td>16,173</td>
<td>80.75</td>
<td>&gt;90%</td>
</tr>
<tr>
<td>20-64</td>
<td>639,041</td>
<td>706,613</td>
<td>90.44</td>
<td>&gt;90%</td>
</tr>
<tr>
<td>65+</td>
<td>752,841</td>
<td>776,945</td>
<td>96.90</td>
<td>&gt;95%, &gt;90%</td>
</tr>
<tr>
<td>All Ages</td>
<td>1,404,946</td>
<td>1,499,802</td>
<td>93.68</td>
<td>&gt;90%, &gt;80%</td>
</tr>
<tr>
<td>In-situ</td>
<td>100,721</td>
<td>115,312</td>
<td>87.35</td>
<td>&gt;90%, &gt;80%</td>
</tr>
</tbody>
</table>

*SEER Contractual Standard **Minimum Acceptable

- After the January updates, the percentages of cases diagnosed 2000-2017 and followed through 2018 were increased to 88.8% for patients age < 20 and 87.5% for patients with in-situ tumors, but they were still below the 90% goal.

Table 2. Cases diagnosed 2000-2017 followed thru 2018 after the January 2020 updates

<table>
<thead>
<tr>
<th>Age</th>
<th>Numerator</th>
<th>Denominator</th>
<th>Percent</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 20</td>
<td>13,890</td>
<td>16,192</td>
<td>85.78</td>
<td>&gt;90%, &gt;80%</td>
</tr>
<tr>
<td>20-64</td>
<td>642,288</td>
<td>709,357</td>
<td>90.55</td>
<td>&gt;90%, &gt;80%</td>
</tr>
<tr>
<td>65+</td>
<td>755,572</td>
<td>779,329</td>
<td>96.95</td>
<td>&gt;95%, &gt;90%</td>
</tr>
<tr>
<td>All Ages</td>
<td>1,411,754</td>
<td>1,504,949</td>
<td>93.81</td>
<td>&gt;90%, &gt;90%</td>
</tr>
<tr>
<td>In-situ</td>
<td>101,428</td>
<td>115,932</td>
<td>87.49</td>
<td>&gt;90%, &gt;80%</td>
</tr>
</tbody>
</table>

*SEER Contractual Standard **Minimum Acceptable

Results - continued

- After the October updates, the percentages of cases diagnosed 2000-2017 and followed through 2018 were 90.6% for patients age < 20 and 90.5% for patients with in-situ tumors, reaching the contractual standard for both case categories.

Table 3. Cases diagnosed 2000-2017 followed thru 2018 after the October 2020 updates

<table>
<thead>
<tr>
<th>Age</th>
<th>Numerator</th>
<th>Denominator</th>
<th>Percent</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 20</td>
<td>15,541</td>
<td>17,145</td>
<td>87.44</td>
<td>&gt;90%, &gt;80%</td>
</tr>
<tr>
<td>20-64</td>
<td>699,136</td>
<td>753,879</td>
<td>92.74</td>
<td>&gt;90%, &gt;80%</td>
</tr>
<tr>
<td>65+</td>
<td>807,402</td>
<td>828,377</td>
<td>97.47</td>
<td>&gt;95%, &gt;90%</td>
</tr>
<tr>
<td>All Ages</td>
<td>1,522,083</td>
<td>1,599,471</td>
<td>95.16</td>
<td>&gt;90%, &gt;90%</td>
</tr>
<tr>
<td>In-situs</td>
<td>112,760</td>
<td>124,392</td>
<td>90.82</td>
<td>&gt;90%, &gt;80%</td>
</tr>
</tbody>
</table>

*SEER Contractual Standard **Minimum Acceptable

Conclusions

- The improvements we achieved for children are partly due to New York’s generous implementation of the Medicaid program and might vary for states based on their Medicaid eligibility criteria and coverage.
- Obtaining access to the Medicaid and discharge data involved developing mutually acceptable and advantageous data use agreements that were facilitated by a shared organizational infrastructure within the state Department of Health.
- Linking cancer patients to Medicaid claims and to statewide hospital discharge data provided an efficient and effective way to capture the latest date of follow-up for patients age < 20 and for patients with in-situ tumors, two categories of cases for which, thankfully, death records do not provide enough information.

Improvement of follow-up through linkages with State Medicaid and Statewide Hospital Discharge Data in New York

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2Department of Epidemiology and Biostatistics, University at Albany School of Public Health, Rensselaer, NY, United States

This work was supported in part by the Centers for Disease Control and Prevention’s National Program of Cancer Registries through cooperative agreement 6NU58DP006309 awarded to the New York State Department of Health and by Contract 75N91018D00005 (Task Order 75N91018F00001) from the National Cancer Institute, National Institutes of Health.

Acknowledgements: This work was supported in part by the Centers for Disease Control and Prevention’s National Program of Cancer Registries through cooperative agreement 6NU58DP006309 awarded to the New York State Department of Health and by Contract 75N91018D00005 (Task Order 75N91018F00001) from the National Cancer Institute, National Institutes of Health.
Introduction

N-IDEAS provides and innovative information technology solution for secure and confidential interstate data exchange and assists CDC in monitoring NPCR Program Standards. N-IDEAS was developed using n-tier solution with .NET technologies and XML webservice following NIST and Advanced Encryption Standard (AES) for security and confidentiality. The first version was released in 2012 while the latest version was released in May 2020 for improved data quality.

Purpose

The purpose of this project was to update N-IDEAS to process XML files, implement mandatory data exchange edits, and improve system functionality.

Methodology

System Features

- Two CCRs can use N-IDEAS to exchange data as long as they have a data exchange agreement in place.
- System now supports XML format data in addition to flat file.
- The new version of application helps to improve data quality before exchanging data by running mandatory edits and allows to track number of records they exchanged.
- Automatic email notification keeps CCR informed of the data exchange.
- Data files remain encrypted throughout the transaction, which provides security protection so that CDC or its contractor don’t have access to the data.

Security Features

- The system provides double encryption in the form of encrypted files, transferred using HTTPS protocol.
- Security applied so that files on NPCR-CSS server will not be accessible to CDC or its contractor.
- Encrypted file is only accessible to receiver and file automatically deleted after expiration, never stored permanently on server.
- System uses public key infrastructure for key generation.

System Architecture and Design

The system is comprised of following components:

- Client Application: A desktop application on CCR users’ machines to allow CCR users to exchange data with other CCRs. Performs optional edits and provides history of data exchange.
- Web services: XML web services are used to transfer data files over a secure HTTPS network as well as notification services to inform users of available exchange.
- Windows Services: Automatic deletion of expired files from the server.

Results and Implications

- 33 registries send and/or receive data through N-IDEAS (map).
- Mandatory edits assures high quality data received.
- Approximately 1,400 files exchanged in 2020 through N-IDEAS (Figure 1).
- Most data files (62-72%) downloaded in one day (Figure 2).

Conclusion

- The N-IDEAS tool is very innovative with its advance security and easy to use and continue to gain its popularity.
- The new features added in the latest version can help CCRs to improve their data quality without adding any extra burden to registries. The feature also allows CCRs to use XML and flat data file format and track the number of records they exchanged with each registry.
- The project highlighted CDC and ICF’s joint effort in developing and implementing the product.
- The N-IDEAS is now widely used by CCRs to exchange data, compared to its early stage.

Acknowledgment

This product and service is a part of the NPCR-CSS contract funded by the Centers for Disease Control and Prevention (Contract # 200-2010-37215/0022). We also wish to thank all participating NPCR CCRs and other partners for implementation and improvement of this product.

Contact Info

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Shailendra Bhavsar, Shailendra.Bhavsar@icf.com
Objective
To identify geographical regions of Alaska that would benefit from cancer screening programs and behavioral risk factor modification programs based on an examination of their cancer incidence rates.

Background
The Alaska Comprehensive Cancer Control Plan1 includes many guiding principles, one of which is to identify disparities in cancer burden and address them through planning and implementation of goals and strategies. This study supports the plan by presenting cancer incidence statistics by geographic area for several cancers with the following characteristics:

- Cancers that are associated with modifiable "risk factors" (such as smoking).
- Cancers for which screening tests are available and recommended, also known as "screening-amenable cancers".

Effective comprehensive control and prevention programs focusing on reducing behavioral risk should result in fewer cancers, thus overall cancer incidence should decrease. Effective screening programs should result in more cancers being found early, thus late-stage cancer rates should decrease.

Methods
Many cancers are associated with modifiable risk factors, such as tobacco use, alcohol use, obesity, HPV infections, and excessive sun exposure. The Alaska Cancer Registry (ACR) reviewed these specific risk factors and the cancers with which they are associated. ACR selected the following 11 cancer primary sites for all age groups as indicators for cancers associated with modifiable risk factors:

- Bladder (tobacco use)
- Female breast (alcohol use)
- Cervix (tobacco use, HPV)
- Colorectal (tobacco & alcohol use, obesity)
- Endometrium (obesity)
- Esophagus (tobacco & alcohol use, obesity)
- Kidney & renal pelvis (tobacco use, obesity)
- Liver (alcohol use)
- Lung & bronchus (tobacco use)
- Melanoma of the skin (UV radiation)
- Oral cavity & pharynx (tobacco & alcohol use, HPV)

ACR examined cancer incidence rates for diagnosis years 2012-2016 for each primary site by Behavioral Health Systems Region (Figure 1) and compared them to the overall state rate. It was noted if any regions had rates that were statistically significantly higher than the state rate based on the range of upper and lower confidence limits.

Certain types of cancers can be detected through a variety of screening techniques. Some cancers are more screening-amenable than others, and only certain age groups are recommended to get screened. The Alaska Comprehensive Cancer Control Plan uses screening recommendations from the U.S. Preventive Services Task Force (USPSTF). ACR selected the following cancer primary sites for specific age groups as indicators for cancers associated with screening:

- Female breast (50-74 years)
- Cervix (21-65 years)
- Colorectal (50-75 years)
- Lung & bronchus (55-80 years)

ACR examined late-stage cancer incidence rates for diagnosis years 2012-2016 for each primary site by age group by Behavioral Health Systems Region (Figure 1) and compared them to the overall late-stage state rate. It was noted if any regions had rates that were statistically significantly higher than the state rate based on the range of upper and lower confidence limits.

Results & Discussion
Based on incidence rates for cancers associated with modifiable risk factors and for screening-amenable cancers, there do appear to be some geographic disparities:

- The Northwest Region has statistically significantly higher rates of colorectal cancer and lung cancer for both late-stage and overall incidence than the state rates. The high late stage rates suggest that this region could benefit from increased screening for both colorectal cancer and lung cancer. Based on risk factors for these 2 cancers, the high overall rates suggest that this region could benefit from obesity intervention programs as well as tobacco cessation programs.

- The Y-K Delta Region has statistically significantly higher rates of colorectal cancer for both late stage and overall incidence than the state rates. The high late-stage rate suggests that this region could benefit from increased screening for colorectal cancer. Based on risk factors for this cancer, the high overall rate suggests that this region could benefit from obesity intervention programs as well as tobacco cessation programs.

- The Mat-Su Region has a statistically significantly higher incidence rate of lung cancer than the rest of the state. Based on risk factors for this cancer, the high overall rate suggests that this region could benefit from tobacco cessation programs.

Conclusions
This study illustrated that there were some geographic disparities for incidence of certain cancers that were either associated with modifiable risk factors or that were amenable to screening. The results of this study have been published in a report2 that was widely distributed via GovDelivery email.

The report is posted on the ACR website (http://dhss.alaska.gov/dph/VitalStats/Pages/cancer/registry.aspx#poster) for download. The report can be used by the Alaska Comprehensive Cancer Partnership stakeholders – clinical and public health professionals as well as other health advocacy partners and the public – to support continued planning and evaluation of cancer prevention and control efforts.

References

Acknowledgements: This presentation was supported by cooperative agreement number NUS8DP006305 from the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of CDC.
Is the use of a seat belt associated with screening for cancer? Results from the BRFSS 2018 survey

Rachel Guyer\(^1\) and S. Cristina Oancea\(^1\)

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Introduction

In January 2020, the American Cancer Society estimated over 1.8 million new cancer diagnoses for the year 2020 along with over 600,000 deaths, making cancer the second leading cause of death in the US. Modern innovations in cancer screening have major impacts on early cancer diagnosis, which is associated with a greater 5-year survival rate. This study seeks to examine the relationship between two health-promoting behaviors: seat belt (SB) use and use of cancer screening services.

Methods

- This cross-sectional study used data from the BRFSS 2018 study
- Eligible participants were US adults 18+.
- Individuals who were ≥80 years of age, pregnant at the time of the survey, or had missing or incomplete responses to any of the included variables were excluded from analyses.
- \(N=323,304\)
- Seat belt use was defined by the BRFSS 2018 and was assessed as a dichotomous variable.
- Adherence to cancer screening recommendations was also defined by the BRFSS 2018.
- The analysis was controlled for the following confounders: age, race, marital status, education, employment, income, smoking, obesity, and depression.
- Multivariable weighted logistic regression models were performed.

Results

- The weighted and adjusted odds (WAOR) of screening for cancer were significantly greater among individuals who were almost or almost always wearing a SB compared to their counterparts in the following groups (Table 2): Females screened for cervical and colorectal cancer
- Males screened for prostate and colorectal cancer
- The association between SB use and screening for breast cancer was not significant among females 40-65 YO (WAOR=1.28; 95% CI: (0.96,1.72)) but was significant among females 50-65 YO (WAOR=1.82; 95% CI: (1.21,2.72)).

Discussion & Conclusions

- Results indicate that certain individuals who wear a seat belt are more likely to participate in recommended screening for breast, cervical, prostate, and colorectal cancer.
- Suggests that those who do not wear a seat belt may be potential targets for public health interventions meant to increase adherence to cancer screening recommendations.
- Further studies are needed to determine whether seat belt use is associated with late-stage initial cancer diagnosis.

Acknowledgement

All research reported in this presentation was supported by an Institutional Development Award (IDeA) from the National Institute of General Medical Sciences of the National Institutes of Health under grant number P20GM103442.
Late-stage cervical cancer diagnosis in young adults in California following the Affordable Care Act

Julianne J. P. Cooley1, Frances B. Maguire1, Renata Abrahão2,3, Cyllene R. Morris1, Arti Parikh-Patel1, Theresa H. M. Keegan1

1California Cancer Reporting and Epidemiologic Surveillance Program, University of California Davis Comprehensive Cancer Center, University of California Davis Health
2Center for Oncology Hematology Outcomes Research and Training (COHORT) and Division of Hematology and Oncology, University of California Davis School of Medicine
3Center for Healthcare Policy and Research, University of California Davis School of Medicine

Background

• YAs (ages 21–39), a historically underinsured population, may experience various barriers to healthcare, including lack of access to the HPV vaccine and Pap smear screening, which can prevent or detect pre-malignant lesions or cervical cancer at early stage (Stage I).

• Following the Affordable Care Act (ACA), many YAs became eligible for insurance. However, YAs continue to be diagnosed with cervical cancer at later stages (II-IV).

Purpose

• To quantify changes in cervical cancer stage at diagnosis following the ACA and identify characteristics associated with later stage diagnosis.

Methods

• Using California Cancer Registry data linked to Medicaid enrollments, we identified YAs aged 21–39 diagnosed with first primary squamous cell carcinoma (SCC) or adenocarcinoma (AC) cervical cancer pre-ACA (March 2005–September 2010), early-ACA (October 2010–December 2013), and post-full ACA implementation (January 2014–December 2017).

• Multivariable logistic regression was used to assess factors associated with later stage diagnosis in YAs diagnosed with AC or SCC. Results are presented as adjusted odds ratios (OR) and 95% confidence intervals (CI).

Results

• Of the 4,244 patients, 31% had AC and 69% SCC (Figure 1).

• 32.7% of YAs were diagnosed at late stage. From pre-ACA to full-ACA, the percent of late-stage diagnoses increased by 6.5% (Figure 2).

• From pre- to full-ACA, continuous Medicaid coverage increased by 23%, whereas private insurance decreased by 11%, and Medicaid at diagnosis/uninsured decreased by 8% (Figure 3).

• YAs with Medicaid at diagnosis/uninsured, continuous Medicaid, and discontinuous Medicaid (vs. private/ military) were more likely to be diagnosed at a late stage for both AC and SCC histologies (Table).

• In AC patients, Asian/Pacific Islanders (vs. non-Hispanic Whites) were more likely to be diagnosed at later stage (Table).

• In SCC patients, older YAs, those of Black or Hispanic race/ethnicity (vs non-Hispanic White), patients with more than one comorbidity, and those diagnosed after the full ACA Expansion (vs pre-ACA) were more likely to be diagnosed at later stage (Table).

• Despite fewer YAs being uninsured and more continuously insured with Medicaid, the proportion of late-stage squamous cell carcinoma increased from pre-to post-ACA implementation.

• Our findings highlight the importance of access to the HPV vaccine and increased screening among underserved YAs in California.

Table: Association between demographic and clinical factors with late-stage (II-IV) cervical cancer diagnosis for YA patients

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Adenocarcinoma OR (95% CI)</th>
<th>Squamous Cell Carcinoma OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age Group (vs 21-25 years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26-39 years</td>
<td>1.19 (0.58, 2.44)</td>
<td>1.65 (1.19, 2.30)</td>
</tr>
<tr>
<td>ACA Implementation Period (vs Pre-ACA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early-ACA</td>
<td>0.83 (0.59, 1.17)</td>
<td>1.08 (0.89, 1.32)</td>
</tr>
<tr>
<td>Post-ACA</td>
<td>1.05 (0.76, 1.43)</td>
<td>1.39 (1.16, 1.68)</td>
</tr>
<tr>
<td>Health Insurance Type (vs Private/military)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuous Medicaid</td>
<td>2.28 (1.56, 3.33)</td>
<td>1.56 (1.27, 1.92)</td>
</tr>
<tr>
<td>Discontinuous Other Public</td>
<td>2.6 (1.64, 4.11)</td>
<td>2.26 (1.76, 2.91)</td>
</tr>
<tr>
<td>Uninsured</td>
<td>2.4 (0.57, 10.05)</td>
<td>3.95 (0.37, 2.39)</td>
</tr>
<tr>
<td>Race/Ethnicity (vs Non-Hispanic White)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic black</td>
<td>0.83 (0.35, 1.97)</td>
<td>1.1 (1.28, 2.53)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.91 (0.66, 1.27)</td>
<td>1.35 (1.11, 1.63)</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>1.63 (1.08, 2.45)</td>
<td>1.16 (0.87, 1.54)</td>
</tr>
<tr>
<td>American Indian</td>
<td>1.3 (0.74, 2.3)</td>
<td>0.59 (0.25, 1.36)</td>
</tr>
<tr>
<td>Neighborhood Socioeconomic Status (vs High)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>1.41 (0.96, 2.07)</td>
<td>1.07 (0.85, 1.35)</td>
</tr>
<tr>
<td>Medium</td>
<td>1.09 (0.77, 1.54)</td>
<td>1.05 (0.83, 1.31)</td>
</tr>
<tr>
<td>Rural</td>
<td>0.545 (0.34, 0.87)</td>
<td>0.91 (0.72, 1.15)</td>
</tr>
<tr>
<td>Comorbidities (vs None)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One comorbidity</td>
<td>1.17 (0.75, 1.83)</td>
<td>1.13 (0.99, 1.74)</td>
</tr>
<tr>
<td>More than one comorbidity</td>
<td>1.92 (0.64, 5.82)</td>
<td>3.26 (1.91, 5.57)</td>
</tr>
<tr>
<td>Marital Status (vs Married)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Married</td>
<td>1.21 (0.91, 1.61)</td>
<td>1.21 (1.02, 1.43)</td>
</tr>
<tr>
<td>Care facility type (vs NCI-Designated)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non NCI-designated</td>
<td>0.91 (0.67, 1.24)</td>
<td>0.72 (0.60, 0.87)</td>
</tr>
</tbody>
</table>

Conclusion

• Despite fewer YAs being uninsured and more continuously insured with Medicaid, the proportion of late-stage squamous cell carcinoma increased from pre-to post-ACA implementation.

• Our findings highlight the importance of access to the HPV vaccine and increased screening among underserved YAs in California.

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2 Oak Ridge Institute for Science and Education, Oak Ridge, Tennessee

Male breast cancer one-year and five-year relative survival was 96.1% and 84.7% during 2007-2016

Relative survival one and five years after breast cancer diagnosis among males, by selected characteristics — United States, 2007–2016

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Number</th>
<th>Relative survival (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1-year</td>
</tr>
<tr>
<td>Overall</td>
<td>14,805</td>
<td>96.1 (95.6–96.5)</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;50</td>
<td>1,626</td>
<td>96.9 (95.8–97.6)</td>
</tr>
<tr>
<td>50–59</td>
<td>2,990</td>
<td>96.5 (95.6–97.1)</td>
</tr>
<tr>
<td>60–69</td>
<td>4,583</td>
<td>96.1 (95.3–96.7)</td>
</tr>
<tr>
<td>70–79</td>
<td>3,471</td>
<td>96.3 (95.2–97.1)</td>
</tr>
<tr>
<td>≥80</td>
<td>2,135</td>
<td>94.8 (92.7–96.3)</td>
</tr>
<tr>
<td>Census Regionc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northeast</td>
<td>3,087</td>
<td>95.8 (94.7–96.7)</td>
</tr>
<tr>
<td>Midwest</td>
<td>2,844</td>
<td>95.6 (94.4–96.5)</td>
</tr>
<tr>
<td>South</td>
<td>5,842</td>
<td>96.0 (95.2–96.6)</td>
</tr>
<tr>
<td>West</td>
<td>2,833</td>
<td>97.4 (96.3–98.1)</td>
</tr>
<tr>
<td>Stage at Diagnosis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Localized</td>
<td>6,779</td>
<td>99.7 (98.9–99.9)</td>
</tr>
<tr>
<td>Regional</td>
<td>6,205</td>
<td>98.7 (98.1–99.2)</td>
</tr>
<tr>
<td>Distant</td>
<td>1,290</td>
<td>70.5 (67.8–73.1)</td>
</tr>
<tr>
<td>Unknown</td>
<td>531</td>
<td>80.5 (76.4–84.0)</td>
</tr>
</tbody>
</table>

*Data were compiled from 45 population-based cancer registries that participate in the National Program of Cancer registries, meet the data-quality standards for inclusion in U.S. Cancer Statistics, and meet the criteria for inclusion in the survival data set, which covers approximately 96% of the U.S. population.

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Background
Breast cancer among males in the United States is rare with approximately 2300 new cases and 500 deaths reported in 2017, accounting for about 1% of breast cancers.

Methods
We examined data on survival patterns of invasive breast cancer (International Classification of Diseases for Oncology, Third Edition: C50.0–C50.9) reported among males during 2007–2016.

Cases with histology codes 9050-9055 (mesothelial neoplasms), 9140 (Kaposi sarcoma), and 9590-9992 (lymphomas and hematopoietic neoplasms) were excluded from analysis.

Used the National Program of Cancer Registries (NPCR) Survival Analytical Database.

Includes data from 45 population-based cancer registries that met United States Cancer Statistics (USCS) publication criteria covering 94% of the population.

Results
One-year relative survival was 97.0% among Hispanics males, 96.4% among White males, 95.3% among other males, and 93.7% among Black males.

Five-year relative survival was 86.2% among other males, 86.0% among White males, 82.5% among other Hispanic males, and 77.6% among Black males.

Males classified as other in this study had the highest percentage of cases diagnosed at localized stage (50%) and Black males had the lowest percentage of cases diagnosed at localized stage (42%).

Discussion
Relative survival one year after breast cancer diagnosis was lower among Black males than among White and Hispanic males.

Assuring access to appropriate treatment might reduce the observed differences in relative survival by race/ethnicity.

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Obesity and Risk of Colorectal Cancer Among Adolescents and Young Adults in the US: An Ecological Study

Amie E. Hwang¹,², James Huynh¹, Lihua Liu¹,², Dennis Deapen¹,²

¹Los Angeles County Cancer Surveillance Program, ²Norris Comprehensive Cancer Center, University of Southern California

There is an increase in incidence of early onset colorectal cancer (CRC) that arise from distal colon and rectum.

For adolescents and young adults (AYA, age 15-39), CRC is considered a rare disease with poor outcome, thus the recent increasing trend of early onset CRC is of great public health concern.

Hypothesis: Is early life obesity associated with rise in AYA CRC incidence?

Acknowledgement: SEER*Stat Database: NAACCR Incidence Data - CiNA Analytic File, 1995-2016, for NHIAv2 Origin, Standard Metropolitan Area, with data from CDC’s National Program of Cancer Registries (NPCR), CCCR’s Provincial and Territorial Registries, and the NCI’s Surveillance, Epidemiology and End Results (SEER) Registries), certified by the North American Association of Central Cancer Registries (NAACCR) as meeting high-quality incidence data standards for the specified time periods, submitted December 2018.

**Background**

- Ecological study using state level data on cancer incidence and prevalence of adolescent obesity.
- NAACCR Cancer in North America (CiNA) Research Data from 48 NPCR state registries were used to estimate state specific, age adjusted incidence rates (AAIR) of cancers in left colon, right colon and rectum among 15 to 39 year-olds from 1996 to 2016.
- CDC Youth Risk Behavior Surveillance System data from 1991 to 2011 were used to estimate state specific prevalence of obesity in 14 to 18 year-olds.

**Results**

Early life obesity may be associated with increase in incidence of left colon and rectal cancer

- States that have high incidence rates of left colon and rectal cancer in AYA also have higher prevalence of adolescent obesity
- There is a significant correlation between state level CRC incidence rate and adolescent obesity level (P<0.001)
- Significant adverse consequences of childhood and adolescent obesity should be considered for future cancer prevention efforts for AYAs.

**Conclusion**

Correlation Between Colorectal Cancer Incidence and Obesity Prevalence

- States that have high incidence rates of left colon and rectal cancer in AYA also have higher prevalence of adolescent obesity
- There is a significant correlation between state level CRC incidence rate and adolescent obesity level (P<0.001)
- Significant adverse consequences of childhood and adolescent obesity should be considered for future cancer prevention efforts for AYAs.

Acknowledgement: SEER*Stat Database: NAACCR Incidence Data - CiNA Analytic File, 1995-2016, for NHIAv2 Origin, Standard File. Hwang - CRC among Young Adults in NA (which includes data from CDC’s National Program of Cancer Registries (NPCR), CCCR’s Provincial and Territorial Registries, and the NCI’s Surveillance, Epidemiology and End Results (SEER) Registries), certified by the North American Association of Central Cancer Registries (NAACCR) as meeting high-quality incidence data standards for the specified time periods, submitted December 2018.
Background

• Colorectal cancer is the 4th most commonly diagnosed cancer in the US and the 2nd leading cause of death1
• Iowa’s colorectal cancer incidence and mortality rates have decreased in those ages 50+, while rates for <50 have been increasing since 2000
• Unclear if increase can be explained by increased high-risk screening, more diagnostic testing with colonoscopy, or changes in behavioral risk factors

Methods

Study Population

Inclusion criteria:
- Iowa residents ages 18 to 50
- Invasive, microscopically confirmed colorectal cancer diagnosed in 2017
- Colon (C180, C182-C187)
- Rectocolon junction (C199)
- Rectum (C209)
- Histologic types included in Colon & Rectal Cancer Collaborative Stage Schema ID: 00200, version 0200

Exclusion criteria:
- Diagnosed at autopsy, pathology or death certificate only, and those identified only by recurrence/progression (non-analytic cases)
- Carcinoid tumors and lymphomas

Study Design/Analysis

- Retrospective cross-sectional descriptive study
- Selected a sample of cases diagnosed in 2017 among those <50, with an oversample of those age <40
- Trained registrars collected data from abstracts submitted to the Iowa Cancer Registry and hospital EHRs where diagnostic services and/or treatment was received

- Reason(s) for seeking medical attention
- Clinical symptoms were the predominant reason why those age <50 sought medical care and presented with advanced stage colorectal cancer

- Multivariable analysis to identify the primary factors driving the increasing incidence of colorectal cancer among those age <50

Key Findings

- In 95% of all cases, symptoms were the primary reason for seeking medical attention
- 33% of cases reported having a family history of colorectal polyps or a colorectal cancer
- 56% of cases reported having a high-risk comorbid condition (diabetes, IBD, and obesity)
- Comparisons between data collected from ICR and hospital medical records demonstrated that patients’ weight, height, alcohol and smoking status, family history, comorbidities, and genetic counseling were not identified from hospital record review, whereas treatment and diagnostic testing could be identified in the registry’s abstracts

Summary & Conclusion

- Clinical symptoms were the predominant reason why those age <50 sought medical care and presented with advanced stage colorectal cancer
- Developed and piloted the abstraction form for future studies and identified which variables could be found in the hospital records vs. the central registry’s database
- This work is an important step in informing a larger study with multivariable analysis to identify the primary factors driving the increasing incidence of colorectal cancer among those age <50

Table 1. Patient and Tumor Characteristics by Age at Diagnosis

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>All (n=43)</th>
<th>Age 20-39 (n=22)</th>
<th>Age 40-49 (n=21)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age (Years)</td>
<td>41.9 (56)</td>
<td>38.5 (50)</td>
<td>44.4 (55)</td>
</tr>
<tr>
<td>Gender (Male)</td>
<td>25 (58)</td>
<td>11 (50)</td>
<td>14 (67)</td>
</tr>
<tr>
<td>Race (White)</td>
<td>42 (98)</td>
<td>21 (95)</td>
<td>21 (100)</td>
</tr>
<tr>
<td>Ethnicity (non-Hispanic)</td>
<td>40 (93)</td>
<td>20 (90)</td>
<td>20 (95)</td>
</tr>
<tr>
<td>Marital Status (Married/ Domestic Partner)</td>
<td>21 (49)</td>
<td>8 (36)</td>
<td>13 (62)</td>
</tr>
<tr>
<td>Residence (Metropolitan)</td>
<td>28 (65)</td>
<td>14 (64)</td>
<td>14 (67)</td>
</tr>
<tr>
<td>Smoking Status (Current)</td>
<td>6 (14)</td>
<td>†</td>
<td>†</td>
</tr>
<tr>
<td>Alcohol Status (Current)</td>
<td>25 (58)</td>
<td>12 (55)</td>
<td>13 (62)</td>
</tr>
<tr>
<td>Body Mass Index (Disease)</td>
<td>21 (50)</td>
<td>10 (45)</td>
<td>11 (55)</td>
</tr>
<tr>
<td>Reason for Diagnosis (Symptoms)</td>
<td>41 (95)</td>
<td>21 (95)</td>
<td>20 (95)</td>
</tr>
<tr>
<td>Family History (Any)</td>
<td>24 (56)</td>
<td>13 (59)</td>
<td>11 (52)</td>
</tr>
<tr>
<td>Colorectal Polyps</td>
<td>6 (14)</td>
<td>†</td>
<td>†</td>
</tr>
<tr>
<td>Colorectal Cancer</td>
<td>10 (23)</td>
<td>6 (27)</td>
<td>†</td>
</tr>
<tr>
<td>Other Cancer</td>
<td>16 (42)</td>
<td>8 (36)</td>
<td>8 (38)</td>
</tr>
<tr>
<td>High Risk Comorbidities (Any)</td>
<td>24 (56)</td>
<td>13 (59)</td>
<td>13 (62)</td>
</tr>
<tr>
<td>Obesity</td>
<td>21 (49)</td>
<td>10 (45)</td>
<td>11 (52)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>†</td>
<td>†</td>
<td>†</td>
</tr>
<tr>
<td>Inflammatory Bowel Disease</td>
<td>†</td>
<td>†</td>
<td>†</td>
</tr>
<tr>
<td>Primary Site</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right (C180, C182, C187, C188)</td>
<td>7 (16)</td>
<td>†</td>
<td>†</td>
</tr>
<tr>
<td>Left (C185, C186, C187, C199)</td>
<td>18 (42)</td>
<td>10 (46)</td>
<td>8 (38)</td>
</tr>
<tr>
<td>Cecum (C209)</td>
<td>18 (42)</td>
<td>8 (36)</td>
<td>10 (48)</td>
</tr>
<tr>
<td>Staging (Summary Stage 2000)</td>
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</tr>
<tr>
<td>Localized</td>
<td>†</td>
<td>†</td>
<td>†</td>
</tr>
<tr>
<td>Regional</td>
<td>23 (53)</td>
<td>12 (54)</td>
<td>11 (52)</td>
</tr>
<tr>
<td>Distant</td>
<td>15 (35)</td>
<td>7 (32)</td>
<td>8 (38)</td>
</tr>
<tr>
<td>Genetic Counseling (Done)</td>
<td>14 (33)</td>
<td>7 (32)</td>
<td>7 (33)</td>
</tr>
<tr>
<td>Germline testing (Done)</td>
<td>16 (37)</td>
<td>9 (41)</td>
<td>7 (33)</td>
</tr>
</tbody>
</table>

* Some data on high risk factors were suppressed due to small numbers

Figure 1. Colorectal Age Adjusted Incidence and Mortality Rates by Age at Diagnosis, SEER 18, 2000-2018

Figure 2. Common Symptoms Reported by Patient by Age at Diagnosis

Acknowledgments

Thank you to Michele West and Amanda Kahl for their assistance on this project.

References

Population-based prevalence of bariatric surgery in cancer patients

Eunjung Lee1,2, Juanjuan Zhang1,2, Sue E. Kim1,2, Dennis Deapan1,2, Anna H. Wu1,2, Lihua Liu1,2, Nasim Sheidase1,2, Amie Hwang1,2, Irene Kang1, Kulmeet Sandhu2, Giske Ursin3, Agustin A. Garcia4
1Los Angeles Cancer Surveillance Program, 2University of Southern California, Los Angeles, CA, 3Cancer Registry of Norway, 4Louisiana State University

Background
- The California Cancer Registry (CCR) data are routinely linked with California Office of Statewide Health Planning and Development (OSHPD) data containing inpatient discharge data, emergency department data, and ambulatory surgery data. The OSHPD data have become a useful source of information on comorbidity status of cancer patients.
- Nearly 40% of adults in the United States have obesity.
- Bariatric surgeries, or weight-loss surgery (WLS), is considered as the most effective treatment of obesity, and the number of WLS has increased exponentially over the past few decades.
- Obesity is associated with all-cause mortality and mortality from breast cancer. However, the prevalence of WLS among cancer patients is not known.

Objectives:
- To utilize CCR-OSHPD data to estimate population-based prevalence of WLS among non-metastasised breast cancer patients.

Methods:
- Database: CCR-OSHPD linked data (1991-2014)
- Patients: First primary breast cancer diagnosed at localized or regional stage between 1991-2014
- Evaluated the frequency of WLS either prior to or after their cancer diagnosis.
- Examined characteristics of the patients according to history of WLS.

Results:
- We identified WLS records between 1991-2014 for 2,844 breast cancer patients (0.7%) diagnosed in California between 1991-2014.
- WLS for 1,437 patients was performed prior to their cancer diagnosis; WLS for 1,407 patients was performed after their cancer diagnosis.
- Patients in the WLS group were younger at cancer diagnosis and more likely to have a comorbid condition(s).

Table 1. Demographic and clinical characteristics according to history/timing of WLS

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>WLS before cancer diagnosis</th>
<th>WLS after cancer diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at diagnosis</td>
<td>(Mean ± SD)</td>
<td>(Median ± SD)</td>
</tr>
<tr>
<td>&lt;40</td>
<td>11,143 (43%)</td>
<td>10,716 (41%)</td>
</tr>
<tr>
<td>40-49</td>
<td>6,235 (23%)</td>
<td>5,967 (22%)</td>
</tr>
<tr>
<td>50-59</td>
<td>2,348 (9%)</td>
<td>2,538 (9%)</td>
</tr>
<tr>
<td>60-69</td>
<td>1,491 (5%)</td>
<td>1,532 (5%)</td>
</tr>
</tbody>
</table>

Table 2. WLS characteristics according to timing of WLS

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>WLS before cancer diagnosis</th>
<th>WLS after cancer diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race/ethnicity</td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td>NHW</td>
<td>26,042 (67%)</td>
<td>25,972 (66%)</td>
</tr>
<tr>
<td>NHB</td>
<td>2,325 (6%)</td>
<td>2,133 (6%)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>5,919 (15%)</td>
<td>5,919 (15%)</td>
</tr>
<tr>
<td>API</td>
<td>4,140 (11%)</td>
<td>4,140 (11%)</td>
</tr>
<tr>
<td>Other/Unknown</td>
<td>3,772 (10%)</td>
<td>3,772 (10%)</td>
</tr>
</tbody>
</table>

Results (2):
- The majority (97%) of the WLS group had only one record of WLS.
- 4.5% of WLS group had a record of revision/removal of a previous procedure or device(s).
- Most frequent procedures: Laparoscopic gastroenterostomy, high gastric bypass, other gastroenterostomy without gastrorectomy, laparoscopic gastric restrictive procedure.

Conclusions:
- About 2,800 patients with breast cancer diagnosed between 1991 and 2014 in California underwent WLS for obesity. More than half of these WLS were performed after their cancer diagnosis.
- CCR-OSHPD linkage database can provide useful information about surgical procedures among cancer patients.

Limitations:
- Follow up time to ascertain post-diagnosis WLS is limited for recently diagnosed cancer patients (up to 2014).
- Additional studies are necessary to understand prevalence of WLS among cancer patients with obesity.

References:

Financial support: National Cancer Institute’s Surveillance, Epidemiology and End Results Program under contract HHSN261201800015I; Charles M. Melbourne and Richard Paul Grace Chair in Cancer Research (CCR;5538850). The collection of cancer incidence data used in this study was supported by the California Department of Public Health pursuant to California Health and Safety Code Section 10885. Centers for Disease Control and Prevention’s (CDC) National Program of Cancer Registries, under cooperative agreement U48DP001904; the National Cancer Institute’s Surveillance, Epidemiology and End Results Program under contract HHSN261201800032I awarded to the University of Southern California, San Francisco, under contract HHSN261201800032I awarded to the University of California, San Francisco, and under contract HHSN261201800058I awarded to the Public Health Institute. The ideas and opinions expressed herein are those of the author(s), and do not necessarily reflect the opinions of the State of California, Department of Public Health, the National Cancer Institute, and the Centers for Disease Control and Prevention or their Contractors and Subcontractors.
Risk of subsequent invasive cancers among oral cavity and pharynx cancer survivors in New Jersey, 1990-2018

Karen S. Pawlish1, Jia Li2, Lisa E. Paddock1,2, Antoniette M. Stroup2,3
1New Jersey Department of Health, Trenton, NJ
2Rutgers Cancer Institute of New Jersey, New Brunswick, NJ
3Rutgers School of Public Health, Piscataway, NJ

Objectives

Evaluate risk of subsequent invasive cancer in a cohort of New Jersey (NJ) residents diagnosed with OPC by cancer site, sex, and race/ethnicity

Methods

• Data Source: New Jersey State Cancer Registry (NJSCR)
• Cohort: NJ residents diagnosed with invasive OPC as 1st primary malignancy 1990-2018
• Exclusions: diagnosed with cancer prior to index OPC, diagnosed at autopsy or by death certificate only or < 2 months of follow-up time
• N = 21,825 persons after exclusions

Statistical analysis: Standardized incidence ratios (SIRs) and 95% confidence intervals (CI)

Results

All analyses were conducted using the MP-SIR session of SEER*Stat version 8.3.8.

• Risk of subsequent lung and bronchus cancer was significantly elevated in female (SIR=2.8, 95%CI 2.5-3.2) and male OPC survivors (SIR=2.9, 95%CI 2.7-3.1).
• Risk of subsequent lung and bronchus cancer was observed in non-Hispanic White and Black female and male OPC survivors, as well as Hispanic males.
• OPC survivors had substantially increased risk of a subsequent OPC (female: SIR=35.5, 95%CI 31.6-39.8 male: SIR=15.1, 95%CI 13.9-16.4).

Table 1: Risk of subsequent tobacco-associated cancers* in New Jersey female oral cavity and pharynx cancer survivors by race/ethnicity, 1990-2018

<table>
<thead>
<tr>
<th>Cancer Site</th>
<th>All Races</th>
<th>Non-Hispanic White (NH-W)</th>
<th>Non-Hispanic Black (NH-B)</th>
<th>Hispanic (H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pancreas</td>
<td>61 2.5</td>
<td>42 1.0 0.7-1.4</td>
<td>33 1.0 0.7-1.4</td>
<td>6 1.7 0.6-3.8</td>
</tr>
<tr>
<td>Lung and Bronchus</td>
<td>292 35.5</td>
<td>121 1.0 0.9-1.2</td>
<td>41 1.1 0.6-1.9</td>
<td>10 1.3 0.5-2.5</td>
</tr>
<tr>
<td>Stomach</td>
<td>9 0.8</td>
<td>5 0.8 0.3-1.5</td>
<td>4 0.8 0.3-1.8</td>
<td>1 0.4 0.0-2.2</td>
</tr>
<tr>
<td>Kidney and Renal Pelvis</td>
<td>14 1.1</td>
<td>9 0.9 0.6-1.5</td>
<td>4 0.9 0.5-1.5</td>
<td>1 0.4 0.0-2.2</td>
</tr>
<tr>
<td>Larynx</td>
<td>42 2.9</td>
<td>24 1.0 0.7-1.4</td>
<td>10 1.1 0.6-1.9</td>
<td>8 1.2 0.6-2.6</td>
</tr>
<tr>
<td>Urinary Bladder</td>
<td>109 5.0</td>
<td>44 1.3 0.7-2.0</td>
<td>34 1.0 0.7-1.5</td>
<td>3 0.8 0.3-2.0</td>
</tr>
<tr>
<td>Esophagus</td>
<td>109 4.5</td>
<td>44 1.3 0.7-2.0</td>
<td>34 1.0 0.7-1.5</td>
<td>3 0.8 0.3-2.0</td>
</tr>
</tbody>
</table>

Table 2: Risk of subsequent tobacco-associated cancers* in New Jersey male oral cavity and pharynx cancer survivors by race/ethnicity, 1990-2018

<table>
<thead>
<tr>
<th>Cancer Site</th>
<th>All Races</th>
<th>Non-Hispanic White (NH-W)</th>
<th>Non-Hispanic Black (NH-B)</th>
<th>Hispanic (H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pancreas</td>
<td>42 2.1</td>
<td>23 1.0 0.6-1.5</td>
<td>19 1.1 0.6-1.9</td>
<td>4 1.1 0.4-2.8</td>
</tr>
<tr>
<td>Lung and Bronchus</td>
<td>241 2.8</td>
<td>112 1.0 0.9-1.2</td>
<td>72 1.0 0.7-1.3</td>
<td>5 0.8 0.3-1.7</td>
</tr>
<tr>
<td>Stomach</td>
<td>7 0.5</td>
<td>4 0.5 0.2-1.0</td>
<td>3 0.5 0.2-1.0</td>
<td>0 0.0 0.0-0.0</td>
</tr>
<tr>
<td>Kidney and Renal Pelvis</td>
<td>14 1.1</td>
<td>6 0.6 0.3-1.0</td>
<td>4 0.6 0.3-1.0</td>
<td>4 0.4 0.1-1.3</td>
</tr>
<tr>
<td>Larynx</td>
<td>36 1.7</td>
<td>18 1.0 0.6-1.5</td>
<td>12 1.0 0.6-1.5</td>
<td>6 1.0 0.4-1.9</td>
</tr>
<tr>
<td>Urinary Bladder</td>
<td>49 2.2</td>
<td>28 1.2 0.7-1.8</td>
<td>14 0.9 0.5-1.5</td>
<td>7 0.8 0.3-1.7</td>
</tr>
<tr>
<td>Esophagus</td>
<td>119 4.1</td>
<td>58 1.4 0.9-2.0</td>
<td>41 1.1 0.7-1.6</td>
<td>10 0.8 0.4-1.8</td>
</tr>
<tr>
<td>Liver</td>
<td>16 1.1</td>
<td>8 0.6 0.3-1.0</td>
<td>7 0.5 0.3-1.0</td>
<td>1 0.4 0.0-2.2</td>
</tr>
</tbody>
</table>

Acknowledgments

The New Jersey State Cancer Registry is supported by the National Program of Cancer Registries of the Centers for Disease Control and Prevention under cooperative agreement 5U48DP005218 awarded to the New Jersey Department of Health and the New Jersey Cancer Institute under contract 75N9101200009 awarded to the Rutgers Cancer Institute of New Jersey, and the State of New Jersey.

References


Strengths

• New Jersey OPC survivors had increased risk of developing subsequent lung, esophagus, larynx and other cancers caused by smoking.
• OPC survivors also had substantially increased risk of a subsequent OPC.
• Our findings support the importance of continued surveillance of OPC patients and promotion of smoking cessation and HPV prevention programs.

Limitations

• Medical surveillance bias
• Possible misclassification of separate primary cancer vs. recurrence of original cancer
• Patients who move out-of-state may result in under-ascertainment of subsequent cases
• Lower power to detect risk of subsequent cancers in some racial/ethnic groups due to small numbers

Conclusions

For the HPV-associated cancers, the risk of vulvar cancer was significantly elevated in female OPC survivors (SIR=2.4, 95%CI 1.1-4.5).

Strengths

• Population-based cancer registry with high-quality data
• Diverse population of New Jersey

Acknowledgments

All analyses were conducted using the MP-SIR session of SEER*Stat version 8.3.8.
Sociodemographic associations with late-stage diagnosis among adolescents and young adults with cutaneous melanoma pre- and post- the Affordable Care Act implementation

Frances B. Maguire¹, Juliannne J.P. Cooley¹, Renata Abrahão²,³, Cyllene R. Morris¹, Arti Parikh-Patel¹, Theresa H. M. Keegan¹,²

¹California Cancer Reporting and Epidemiologic Surveillance Program, University of California Davis Comprehensive Cancer Center, University of California Davis Health
²Center for Oncology Hematology Outcomes Research and Training (COHORT) and Division of Hematology and Oncology, University of California Davis School of Medicine
³Center for Healthcare Policy and Research, University of California Davis School of Medicine

Background:
• Cutaneous melanoma, the third most frequent cancer among adolescents and young adults (AYAs, 15–39), is generally curable when diagnosed early; when diagnosed late stage (III/IV), survival is greatly diminished.
• Recent studies have found that the Affordable Care Act (ACA) increased health insurance coverage and decreased the likelihood of late-stage cancer diagnosis among AYAs.

Purpose:
• To examine associations between sociodemographic factors and late-stage melanoma in AYAs, pre- and post- ACA implementation in California.

Methods:
• Data for 8,586 AYAs diagnosed with melanoma from 2005 to 2017 were obtained from the California Cancer Registry and linked to Medicaid enrollment files.
• Period of diagnosis was grouped as pre-ACA (March/2005–September/2010), early ACA (October/2010–December/2013) and full ACA implementation (2014–2017).
• Multivariable logistic regression examined factors associated with late-stage diagnosis (III/IV vs I/II).

Results:
• The proportion of younger AYAs (ages 15-25, n=1,450) without insurance (or who acquired Medicaid at diagnosis) decreased from 5.8% to 3.3% while proportions remained unchanged for older AYAs (ages 26-39, n=7,136) (Figures 1 & 2).
• In both age groups, private insurance decreased and continuous Medicaid increased pre-ACA to post-full ACA (Figures 1 & 2).
• Among younger AYAs there were no significant changes in stage over ACA periods (Figure 3).
• Among older AYAs, there was a small but significant (p<0.009) decrease in stage I disease post ACA.
• Lack of insurance or Medicaid (vs. private insurance), non-Hispanic Black, Hispanic, or Asian/Pacific Islander race/ethnicity (vs. non-Hispanic white), and residence in low (vs high) SES neighborhoods were associated with higher likelihood of late-stage diagnosis in older AYAs (Table).

Conclusion:
• Although the implementation of the ACA impacted insurance coverage, with the proportion of AYAs continuously Medicaid insured increasing and the proportion of younger AYAs uninsured decreasing, older AYAs were more likely to be diagnosed with late-stage disease post ACA.
• Late-stage diagnosis in older AYAs was associated with factors reflecting poor access to healthcare (no insurance, low SES, non-white race/ethnicity), highlighting the need for policy interventions focused on melanoma prevention and early diagnosis, particularly in underserved populations.

Table. Sociodemographic factors associated with late-stage (III/IV vs. I/II) melanoma at diagnosis, by AYA age group

<table>
<thead>
<tr>
<th>15-25 years</th>
<th>26-39 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR (95% CI)</td>
<td>p-value</td>
</tr>
<tr>
<td>Continuous Medicaid vs. private</td>
<td>1.83 (0.95, 3.51)</td>
</tr>
<tr>
<td>No insurance vs. private</td>
<td>1.01 (0.43, 2.37)</td>
</tr>
<tr>
<td>Post early ACA expansion vs. pre-ACA</td>
<td>1.28 (0.80, 2.05)</td>
</tr>
<tr>
<td>Post full ACA expansion vs. pre-ACA</td>
<td>1.15 (0.72, 1.84)</td>
</tr>
<tr>
<td>Male vs. female</td>
<td>2.45 (1.67, 3.60)</td>
</tr>
<tr>
<td>Low SES quintile vs. high</td>
<td>1.13 (0.53, 2.39)</td>
</tr>
<tr>
<td>NH Black vs. NH white</td>
<td>5.61 (0.42, 75.09)</td>
</tr>
<tr>
<td>Hispanic vs. NH white</td>
<td>1.70 (0.98, 2.93)</td>
</tr>
<tr>
<td>Asian/Pacific Islander vs. NH white</td>
<td>0.86 (0.22, 3.34)</td>
</tr>
</tbody>
</table>

Contact: fbmaguire@ucdavis.edu
The effect modifying role of race and obesity on the relationship between cancer diagnosis and heavy drinking: results from the 2018 BRFSS study

Rachel Guyer¹, S. Cristina Oancea¹, and Ursula Running Bear¹
¹Department of Population Health, School of Medicine and Health Sciences, University of North Dakota, Grand Forks, ND, USA

Introduction
In January 2020, the American Cancer society estimated 1.8 million new cancer diagnoses in 2020. A cancer diagnosis may cause significant physical and psychological distress to patients, which may be associated with maladaptive coping mechanisms. Heavy alcohol consumption is a known risk factor for several types of cancer. Additionally, alcohol dependence is associated with a 3-fold increase in the likelihood of smoking cigarettes, which also increases cancer risk. The relationship between alcohol consumption and cancer has been well-characterized. However, little research exists describing the potential impact of a cancer diagnosis on heavy drinking.

Methods
• This cross-sectional study used BRFSS 2018 data to examine the relationship between cancer diagnosis and heavy drinking.
• Eligible participants were US adults age 18+.
  - People ≥80 years of age, pregnant women, and individuals with missing values for any of the included variables were excluded from analysis.
  - N=299,850
• Heavy drinking and cancer diagnosis were defined by BRFSS 2018.
• The analysis was controlled for the following confounders: age, education, employment, income, insurance, and smoking
• Multivariable weighted logistic regression models were performed.
• Race and obesity were independently identified as effect modifiers.

Results
• The weighted and adjusted odds (WAO) of current heavy drinking in American Indian/Alaska Native obese individuals and White non-obese individuals who have been diagnosed with cancer were significantly lower than the WAO of current heavy drinking among their counterparts who have not been diagnosed with cancer (Table 1).
• Marginally significant decreases in heavy drinking were seen among White obese and Black obese individuals who have been diagnosed with cancer (Table 1).

Discussion & Conclusions
• The study indicates race and obesity modify the association between cancer diagnosis and heavy drinking.
• There may be a difference in perceived health risks after cancer diagnosis in these race and BMI groups.
• There may also be a difference in coping mechanisms between racial and BMI groups.
• Higher levels of social support may lead to more adaptive coping mechanisms for cancer-related stress.
• This study should be followed by a longitudinal study that examines the relationship between cancer diagnosis and subsequent heavy drinking and additional studies that examine the relationship between social support and cancer diagnosis.

Acknowledgement
All research reported in this presentation was supported by an Institutional Development Award (IDeA) from the National Institute of General Medical Sciences of the National Institutes of Health under grant number P20GM103442.

<table>
<thead>
<tr>
<th>Race, obesity and cancer diagnosis</th>
<th>Heavy drinking Yes vs. No</th>
<th>N</th>
<th>WAOR (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian or Alaska Natives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not obese Cancer diagnosis - Yes</td>
<td>4.211</td>
<td></td>
<td>1.48 (0.79, 2.80)</td>
<td>0.2223</td>
</tr>
<tr>
<td>Cancer diagnosis - No</td>
<td>Ref</td>
<td>Ref</td>
<td>Ref</td>
<td></td>
</tr>
<tr>
<td>Obese Cancer diagnosis - Yes</td>
<td>2.966</td>
<td></td>
<td>0.21 (0.11, 0.42)</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>Cancer diagnosis - No</td>
<td>Ref</td>
<td>Ref</td>
<td>Ref</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not obese Cancer diagnosis - Yes</td>
<td>165,832</td>
<td></td>
<td>0.85 (0.75, 0.96)</td>
<td>0.0090</td>
</tr>
<tr>
<td>Cancer diagnosis - No</td>
<td>Ref</td>
<td>Ref</td>
<td>Ref</td>
<td></td>
</tr>
<tr>
<td>Obese Cancer diagnosis - Yes</td>
<td>81,658</td>
<td></td>
<td>0.80 (0.62, 1.02)</td>
<td>0.0744</td>
</tr>
<tr>
<td>Cancer diagnosis - No</td>
<td>Ref</td>
<td>Ref</td>
<td>Ref</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not obese Cancer diagnosis - Yes</td>
<td>15,022</td>
<td></td>
<td>1.31 (0.74, 2.33)</td>
<td>0.3552</td>
</tr>
<tr>
<td>Cancer diagnosis - No</td>
<td>Ref</td>
<td>Ref</td>
<td>Ref</td>
<td></td>
</tr>
<tr>
<td>Obese Cancer diagnosis - Yes</td>
<td>11,732</td>
<td></td>
<td>0.58 (0.31, 1.10)</td>
<td>0.0950</td>
</tr>
<tr>
<td>Cancer diagnosis - No</td>
<td>Ref</td>
<td>Ref</td>
<td>Ref</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not obese Cancer diagnosis - Yes</td>
<td>13,315</td>
<td></td>
<td>0.97 (0.42, 2.24)</td>
<td>0.9423</td>
</tr>
<tr>
<td>Cancer diagnosis - No</td>
<td>Ref</td>
<td>Ref</td>
<td>Ref</td>
<td></td>
</tr>
<tr>
<td>Obese Cancer diagnosis - Yes</td>
<td>5,112</td>
<td></td>
<td>4.81 (2.06, 11.24)</td>
<td>0.0003</td>
</tr>
<tr>
<td>Cancer diagnosis - No</td>
<td>Ref</td>
<td>Ref</td>
<td>Ref</td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Results from the multivariable weighted logistic regression model. WAOR=weighted and adjusted odds ratio; CI=confidence interval; Bolded are significant results.
Trends in Cancer Incidence in Younger Adults in New Jersey by Sex, Age and Race/Ethnicity, 1990-2018

Karen S. Pawlish1, Jie Li1, Stasia S. Burger1, Lisa E. Paddock2,3, Antoinette M. Stroup2,3
1New Jersey Department of Health, Trenton, NJ
2Rutgers Cancer Institute of New Jersey, New Brunswick, NJ
3Rutgers School of Public Health, Piscataway, NJ

Background

- Recent research indicates that the burden of cancer is growing in younger adults, including increasing incidence of colorectal, uterine corpus and other cancers.1
- While colorectal cancer incidence has declined in older adults and in the population overall, increases were reported in younger adults in New Jersey and other areas.2

Objectives

Characterize time trends in incidence of common cancers in younger adults in New Jersey by sex, age at diagnosis group, race/ethnicity and primary site

Methods

Data Source: New Jersey State Cancer Registry (NJSCR)
- Population-based registry that collects data on all cancers diagnosed in New Jersey residents since 1979
- Analytic Cohort: NJ residents diagnosed at age 20-49 years from 1990-2018 with the most common cancers in that age group

Statistical methods:
- Calculated annual age-adjusted cancer incidence rates for NJ residents by sex, race/ethnicity, age at diagnosis group, and primary site.
- Joinpoint regression analysis: Calculated annual percent changes (APCs) in cancer incidence rates and identified points in time when incidence rate trends change significantly (joinpoints) using Joinpoint Regression Program, Version 4.8.0.1, April 2020, National Cancer Institute.

Joinpoint regression analysis: Calculated annual percent changes (APCs) in cancer incidence rates and identified points in time when incidence rate trends change significantly (joinpoints) using Joinpoint Regression Program, Version 4.8.0.1, April 2020, National Cancer Institute.

Results

Trends in Incidence Rates by Sex and Cancer Site in Younger Adults in New Jersey, 1990-2018

<table>
<thead>
<tr>
<th>Sex</th>
<th>Site</th>
<th>No. Cases</th>
<th>Years</th>
<th>APC* (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females</td>
<td>Breast</td>
<td>43,165</td>
<td>1990-2018</td>
<td>10.2^ (0.1, 0.4)</td>
</tr>
<tr>
<td></td>
<td>Thyroid</td>
<td>12,610</td>
<td>1990-1995</td>
<td>0.1 (0.0, 0.2)</td>
</tr>
<tr>
<td></td>
<td>1995-2000</td>
<td>1.1 (0.2, 1.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2000-2018</td>
<td>1.1 (0.7, 1.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Colon cancer</td>
<td>5,471</td>
<td>1990-2005</td>
<td>2.6^ (1.5, 3.7)</td>
</tr>
<tr>
<td></td>
<td>Melanoma of the skin</td>
<td>6,257</td>
<td>1990-2005</td>
<td>4.7^ (4.6, 4.9)</td>
</tr>
<tr>
<td></td>
<td>Corpus uterus and NO5</td>
<td>4,823</td>
<td>1990-2010</td>
<td>4.0^ (0.0, 8.8)</td>
</tr>
<tr>
<td></td>
<td>Cervix uteri</td>
<td>6,426</td>
<td>1990-2015</td>
<td>2.7^ (2.1, 3.3)</td>
</tr>
<tr>
<td></td>
<td>2015-2018</td>
<td>3.3^ (1.8, 5.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>Colorectal</td>
<td>6,048</td>
<td>1990-2018</td>
<td>6.1^ (0.8, 1.5)</td>
</tr>
<tr>
<td></td>
<td>Testis</td>
<td>5,651</td>
<td>1990-2005</td>
<td>0.6^ (0.2, 0.9)</td>
</tr>
<tr>
<td></td>
<td>Thyroid</td>
<td>3,280</td>
<td>1990-2016</td>
<td>6.3^ (5.1, 7.7)</td>
</tr>
<tr>
<td></td>
<td>2016-2018</td>
<td>2.5 (0.7, 5.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-Hodgkin Lymphoma</td>
<td>5,761</td>
<td>1990-1994</td>
<td>6.9^ (6.4, 7.4)</td>
</tr>
<tr>
<td></td>
<td>Prostate</td>
<td>4,740</td>
<td>1990-2005</td>
<td>6.4^ (7.2, 5.7)</td>
</tr>
</tbody>
</table>

Rates are per 100,000 and age-adjusted to the 2000 US standard population. 2018 data are preliminary.

*APCs in red font are statistically significant decreases.
**APCs in blue font are statistically significant increases. APs in blue font are statistically significantly decreases.

In younger women, breast (APC=0.2), colorectal (APC=1.3), and uterine cancer (APC=0.4) incidence increased significantly (p<0.05), and thyroid cancer (APC=9.0) increased from 1993-2009.

Cervical cancer decreased (APC=-2.7) from 1990-2013.

Melanoma decreased from 2004-2018 (APC=-2.87) in younger women after increasing from 1990-2005 (APC=5.7).

Uterine cancer increased significantly in women aged 20-29 and 30-39.

Breast cancer increased in younger Hispanic White (APC=1.2) but not Hispanic women.

Limitations

- Delayed reporting of cancer cases by out-of-state facilities may impact incidence rates in 2018 and trends in recent diagnosis years.
- Delayed reporting of race or ethnicity in recent diagnosis years may impact race/ethnicity-specific rates and trends in recent diagnosis years.

Strengths

- Population-based cancer registry with high-quality data.
- Diverse population of New Jersey.
- Long term follow-up to evaluate incidence trend data (29 years).

Conclusions

- Monitoring cancer trends in younger adults can help to evaluate whether changes in screening guidelines are needed and understand the future cancer burden as this cohort ages.
- Further research is needed to identify risk factors for cancers that are increasing in this population, including the role of obesity.
INTRODUCTION
Cancer remains the leading cause of death in Maine, and the state’s cancer incidence and mortality are higher than the US national average. The Maine Cancer Registry (MCR) currently reports on risk-factor associated cancers in its annual cancer report including tobacco, obesity, and HPV-associated cancers. Obesity-associated cancer indicators are used by partners throughout the Maine Center for Disease Control as part of program planning and performance monitoring for cancer prevention and control activities.

METHODS
MCR epidemiologists assessed trends in obesity-associated cancer incidence using registry data and the predefined SEER*Stat variables for calculating the number of associated cancers for selected risk factors.2 We assessed trends in adult overweight and obesity using Maine’s Behavioral Risk Factor Surveillance System (BRFSS). Furthermore, we explored differences in obesity-associated cancer trends when including and excluding colorectal cancers and analyzed how obesity-associated cancer differs by sex, age, and county of residence.

RESULTS
Nearly two-thirds of Maine adults are overweight or obese, and the prevalence of obesity among adults in Maine over the past two decades more than doubled from 14% in 1995 to 32% in 2019, which aligns with national trends (Figure 1). Overall, the percent of Maine adults who were either overweight or obese increased from 52% in 2017 to 65% in 2019.3 Over one-third of Maine’s new cancer cases are overweight or obesity-associated cancers. From 2005-2018, the incidence of cancers not associated with overweight and obesity and the incidence of colorectal cancers both declined significantly (by 13% and 37%, respectively), while the incidence of obesity-associated cancers (excluding colorectal) have not decreased over the past 10 years, and there are differences in incidence by age subgroup and sex. This research suggests that cancers associated with obesity will continue to be a public health priority for Maine in the coming decade. Obesity prevention activities and policies that promote healthy eating and active living may contribute to reducing the disproportionate burden of cancer in Maine.

LIMITATIONS & CONCLUSIONS
This analysis shares many of the limitations noted in the original national analysis of obesity-associated cancers, including that cancer patient BMI is not known based on current registry data and the definition of obesity-associated cancers may expand in the future with additional research.1 While Maine’s overall cancer incidence has decreased over the last two decades, obesity-associated cancers (excluding colorectal cancer) have not decreased over the past 10 years, and there are differences in incidence by age subgroup and sex. This research suggests that cancers associated with obesity will continue to be a public health priority for Maine in the coming decade. Obesity prevention activities and policies that promote healthy eating and active living may contribute to reducing the disproportionate burden of cancer in Maine.

REFERENCES
4. Maine Cancer Registry, Maine CDC, Department of Health and Human Services, November 2020 submission.

ACKNOWLEDGEMENTS
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Trends of colorectal cancer stage distribution in Europe and the USA, 1993–2015

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European Commission, Joint Research Centre, Ispra, Italy

BACKGROUND

- Colorectal cancer screening programmes have been successfully implemented in Europe and the USA, allowing for detection of precancerous lesions or early stage cancers, significantly decreasing mortality.
- This analysis reports trends in stage distribution for patients aged 50–74 years, which are often the target of screening programmes.

METHODS

Data from cancer registries (CRs) contributing to the European Cancer Information System (ECIS), reporting stage and data from the SEER database.

- Colorectal as first cancer, including non-malignant tumours (NMTs)
- Period 1993–2015
- 3 stage groups: NMTs, stage I-II, stage III-IV.
- Stage group proportion by CR and incidence year.
- Average Annual Percent Change (AAPC) of proportions computed with the Joinpoint Trend Analysis Software.

RESULTS

126,656 cases from 10 CRs in 5 European Countries and 224,390 cases from 13 US CRs were analysed.

CONCLUSIONS

- An increase in the proportion of NMTs, and a decrease in the proportion of stage I-II and III-IV cases was observed in Europe between the largely pre-screening period 1993–1997, and 2010–2014, when screening had already been implemented in many European countries.
- In the USA stage distribution remained similar between the two periods, with a small increase in stage III-IV proportion, and a slight decrease for NMTs.

AAPCs:

US1 in situ: 0.7%; stage I-II: 0.6%*; stage III-IV: 0.7%*; US2 in situ: 3.7%; stage I-II: -0.5%*; stage III-IV: 1.1%*; US3 in situ: 0.1%; stage I-II: -0.4%*; stage III-IV: 0.6%*; US4 in situ: 0.9%; stage I-II: -0.3%*; stage III-IV: 0.5%*.

* Indicates that the Annual Percent Change (AAPC) is significantly different from zero at the alpha = 0.05 level.
**BACKGROUND**
- Cancer surveillance data must be easy to access, understand, and share.
- U.S. Cancer Statistics (USCS) Data Visualizations tool gives users access to the official federal cancer statistics.
- CDC makes continual enhancements to add data and improve technology.

**OBJECTIVES**
- To improve USCS data usefulness and relevancy, CDC redesigned and updated the Data Visualizations tool with additional data and more interactive graphics.

**METHODS**
- Cancer Surveillance Branch collaborates with the Geospatial Research, Analysis, and Services Program at ATSDR to develop, update, and maintain the USCS Data Visualizations tool.
- Techniques such as usability assessments, site metrics, and User Experience and User Interface (UX/UI) design services to develop layout prototypes were leveraged.
- Updates include adding more visualizations, improved data sharing, and implementing and evaluating website metrics.

**CONCLUSION**
- Surveillance data are fundamental to measure progress and target action. CDC’s updated interactive, user-friendly USCS Data Visualizations tool is designed to make cancer data more easily accessible and usable and enables users to better interpret and disseminate cancer data.

**NEW DESIGN HIGHLIGHTS**
- Redesigned application includes five tabs. Each tab has underlying webpages where data are displayed as maps and bar charts with interpretative text.
- Users can customize displays of overall and cancer-specific statistics, create PowerPoint slides, and share each view via social media.
- The new design summarizes the data and encourages comparisons between cancer sites, geographies, demographic groups, risk factors, and over time.

**FUTURE UPDATES**
- Cancer staging
- Survival by stage
- Cancer screening and risk factors variables from the Behavioral Risk Factor Surveillance System
- Human Papilloma Virus (HPV) vaccination data from immunizations

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For more information visit [www.cdc.gov/uscs/dataviz](http://www.cdc.gov/uscs/dataviz)
Using Cancer Registry Data to address prostate cancer treatment disparities in Massachusetts

Nyambos J1, Gershman ST1, Knowlton R1, Christie A2
1 Massachusetts Cancer Registry, Department of Public Health
2 Comprehensive Cancer Prevention and Control Network, Massachusetts Department of Public Health

BACKGROUND

One of the objectives for the Massachusetts State Cancer plan was to conduct an H3050 analysis of the Massachusetts Cancer Registry (MCR) data to identify race/ethnicity disparities in the treatment of prostate cancer and to conduct focused interventions aimed at ensuring equitable treatment for prostate cancer.

OBJECTIVES

This presentation will describe the collaborative process in which the Massachusetts Comprehensive Cancer Prevention and Control Network (MCCPCN) worked with the MCR and the Prostate Cancer Workgroup to conduct an in-depth analysis of the MCR data and to prepare manuscript prostate cancer treatment disparities in Massachusetts.

METHODS

Three sets of data analyses were conducted to identify prostate cancer treatment disparities in Massachusetts.

1. The MCCPCN and the Prostate Cancer Workgroup conducted an in-depth analysis of the 2004-2015 MCR data.
2. A qualitative study to examine disparities in prostate cancer treatment between Black NH and White NH men was conducted using KIIs.

RESULTS

- **QUANTITATIVE RESULTS**
  - **RESULTS FROM THE MCR DATA ANALYSIS ON TREATMENT DISPARITIES.**
    - Black NH men were significantly less likely to receive treatment (surgery, hormone therapy, or radiation) for prostate cancer than White NH men.
    - A significantly higher proportion of White NH men also received surgery compared to Black NH men.
    - Simlar results were found for hormone therapy.
    - Although a greater proportion of White NH men received radiation compared to Black NH men, the difference was only borderline statistically significant.
  - **RESULTS FROM THE MCR DATA ANALYSIS ON TREATMENT DISPARITIES.**
    - Men with public insurance including Medicaid and Medicare experienced lower odds of definitive therapy compared to men with private insurance.
    - Literature review:
      - There were significant county-level differences in odds of receiving definitive therapy.
      - Despite the lower odds of definitive therapy, Black NH men in Massachusetts had a 17% lower cancer-specific mortality hazard compared to White NH men on both unadjusted and adjusted analyses (HR = 0.83, 95% CI: 0.70-0.99).

- **QUALITATIVE RESULTS**
  - Literature review:
    - Having high-risk cancer (Adjusted HR = 1.498, 95% CI: 1.4-1.603) and public insurance including Medicaid (Adjusted HR = 1.933, 95% CI: 1.383-2.473) were associated with worse cancer specific survival.

CONCLUSIONS

We acknowledge the Centers for Disease Control and Prevention under cooperative agreement 5NU58DP006271-09 and the National Cancer Institute under contract HHSN261201800008I awarded to the Massachusetts Cancer Registry at the Massachusetts Department of Public Health.

The contents of this poster are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention nor the National Cancer Institute.

ACKNOWLEDGEMENT

MCR data were used to identify prostate cancer treatment disparities in Massachusetts and KIs were used to look at potential causes of these disparities. The MCCPCN and the Prostate Cancer Workgroup will be using this MCR data analysis as well as qualitative data to prepare interventions for addressing disparities in prostate cancer treatment in Massachusetts.
Using Voter Registration Data to Fill in Physical Address in Montana

Heather Zimmerman, MPH  Debbi Lemons, CTR

Background
Historically, about 15% of cancer cases reported to the Montana Central Tumor Registry (MCTR) have only a PO Box for address at diagnosis and no physical address. Physical address is used to geocode cases and assign them to the appropriate census tract. PO Box only cases are assigned to the center of their zip code when geocoded and have a high likelihood of being classified to the wrong census tract. Additionally, the zip code of a person’s PO Box is not necessarily the same as the zip code where they live. Because census tract is useful for analysis of sub-county areas in response to cancer cluster concerns, it is a priority of the MCTR to improve the proportion of cases with physical address in the registry.

Methods
The Montana Secretary of State’s office maintains the statewide voter file including the name, date of birth, mailing address, physical address, and voter eligible date (the date when that person is eligible to vote at the given physical address) for all registered voters. MCTR matched PO box only cases to the statewide voter file to assess the usefulness of the file to obtain physical address. MatchPro software from the National Cancer Institute was used to link all PO box only cases reported to the MCTR as of November 2, 2020 and diagnosed from 2008 to 2019.

Results
Linkage with the statewide voter file resulted in 4,311 cases having a physical address added to their record. The proportion of PO Box only cases that were able to be matched increased as year of diagnosis became more recent. About 20% of PO Box only cases diagnosed in 2008 to 2011 had a physical address added. While over half (54%) of PO Box only cases diagnosed in 2019 were able to be linked. The additional physical addresses led to a significant improvement in the proportion of cases geocoded to the street level or better for all diagnosis years and the magnitude of the improvement increased as the year of diagnosis became more recent. Ninety-one percent of cases diagnosed in 2019 were able to be geocoded to the street level or better. There was a corresponding decrease in the proportion of cases geocoded to the PO Box zip centroid, less than 2% of cases diagnosed in 2018 and 2019. The proportion of cases with a physical address that were still geocoded to the centroid of their zip code did not change for diagnosis years 2008 to 2017. However, there was an increase in the proportion of cases geocoded to the zip code centroid diagnosed in 2018 and 2019 indicating that some of the physical address imported from the voter file could not be geocoded precisely.

Conclusions
The statewide voter files is a valuable resource for obtaining physical address for cases reported with only a PO Box. MCTR will start matching to the voter file annually.