CANCER REGISTRY NAME: California Cancer Registry

TOPIC: Using text mining to extract systematic treatment information (automation)

TITLE: Extracting lung cancer treatment information from text-fields in the CCR database

AUTHORS: Frances B. Maguire, Cyllene R. Morris, Arti Parikh-Patel, Rosemary D. Cress, Theresa H. M. Keegan, Chin-Shang Li, Patrick S. Lin, Kenneth W. Kizer

SUMMARY: Surveillance of systemic treatment utilization at the population level can provide insight into dissemination of new or existing cancer treatments. Furthermore, survival outcomes by specific treatment type extend knowledge about the effectiveness of drug regimens among all patients, not just those eligible for clinical trials. Additionally, treatment disparities by source of health insurance, age, race/ethnicity, or socioeconomic status can be identified and addressed. The California Cancer Registry has specific treatment information for patients in an unstructured free-text format. Using SAS-based text mining, the CalCARES Program developed an algorithm to extract specific systemic treatment information for stage IV non-small cell lung cancer (NSCLC) from the free-text treatment text fields. Results were compared to a manual review of the same records. The methodology can be applied to other cancer sites.

CHALLENGE: Because specific treatment information for patients in the California Cancer Registry is contained in an unstructured free-text format and manual review is laborious, the information is infrequently used. Therefore the quality and completeness of the text-field records were unknown. CalCARES manually reviewed the treatment text fields first to serve as a gold standard for comparison to results from text mining.

SOLUTION: CalCARES developed a SAS-based text mining algorithm that searched for specific treatment drugs and classified them into six treatment groups that align with National Comprehensive Cancer Center (NCCN) guidelines for stage IV NSCLC. The SAS-based algorithm used Perl regular expressions and if/then logic in SAS 9.4. Perl regular expressions rely on text string matching and can be used by any SAS programmer and modified for other cancer sites and research questions.

RESULTS: Manual review of 24,845 text field records associated with 17,310 patients diagnosed with stage IV NSCLC from 2012 to 2014 found specific treatment information for 78% of patients. Percent agreement between SAS-based text mining and manual review ranged from 91.1% to 99.4% for the six treatment groups, unknown, and no treatment. Text mining used one-sixth of the time required for the manual abstraction of the same data. Findings indicated that there has been variable utilization of treatments and almost a third (31.7%) of patients did not receive systemic treatment. Disparities in treatment use by socioeconomic status (SES) were apparent.

SUSTAINING SUCCESS: The SAS-based text-mining algorithm is a viable alternative to natural language processing (NLP) which requires a significant amount of development, customization, and expertise and has implementation costs. It is CalCARES' intent to apply the text mining algorithm to other cancer sites, potentially maximizing the utility of extant information in the California Cancer Registry for comparative effectiveness research.

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CANCER REGISTRY NAME: Florida Cancer Data System
TOPIC: Reporting from the Veteran Administration Facilities
TITLE: Reporting from the Veteran Administration Facilities
AUTHOR: Gary M. Levin, BA, CTR

SUMMARY: Reporting from Veterans Administration (VA) facilities has been non-existent since 1993 in Florida. Many efforts including those by Florida Department of Health and the Center for Disease Control National Program of Cancer Registries (CDC NPCR) over the time period from 2009 to 2016 have not been successful. The six individual VA hospitals in the state of Florida were not willing to report directly to the Florida Cancer Data System (FCDS) due to scarce resources. Finally, in 2016 a data use agreement was executed between the Florida Department of Health (FDOH) and the Veterans Administration Central Cancer Registry (VACCR) in Washington D.C. to report on behalf of the six VA hospitals in Florida to the FCDS. This process has led to the reporting of 57,255 abstracts between diagnosis years 1963 and 2015 from the six VA hospitals in Florida yielding 37,688 new cancer incidence cases.

CHALLENGE: For Florida, the lack of VA reporting has caused an underreporting of primarily male cancer cases, with an emphasis on prostate cancer. To accurately produce rates and disseminate data to health professionals, decision makers, and researchers, reporting from VA facilities is critical and needed by the FCDS. Issues of security of the data, to redacting of text information, to the refusal of reporting from individual facilities and resolving data quality issues were the most difficult challenges to overcome. Additionally, the VA has had significant turnover and lacked the necessary resources for the VACCR to be able to manage the data they received. Reporting to a central cancer registry was not the top priority of the VACCR.

SOLUTION: Through the near seven year effort and significant amount of back and forth primarily with attorneys, the FDOH was able to come to an agreement with the VA and get a data use agreement (DUA) signed. Based on the DUA, the VA has made two submissions to Florida. Due to the inability of the VACCR to resolve edits, the FCDS had to expend significant resources to quality control the cases to clear potential demographic and tumor linkages. The VA submitted 49,580 in July 2016 and an additional 6,658 reports in November of 2017. Prior to that, the FCDS has received 1,017 cases of which the last submission was in 1993.

RESULTS: This process has led to the reporting of 57,255 abstracts between diagnosis year 1963 and 2015 from the six VA hospitals in Florida yielding 37,688 new cancer incidence cases. Of the cases submitted, approximately 97% were male, 87% were White, 96% were non-Hispanic, and 75% were 60 years of age or older. The most frequent cancer sites included prostate (25%), lung (17%) and colorectal (9.5%). Due to continued inconsistent reporting from the six VA facilities into the VACCR data repository, more VA reports were from Bay Pines VA Medical Center and resulted in greater case capture for two Florida counties, Hillsborough and Pinellas, accounting for 30% of VA cases reported.

SUSTAINING SUCCESS: Sustaining our original success has been the most difficult part of the process. The VISN8/VACCR lead on this project has retired and they have lost their sole registrar who processes the cases from the VA hospitals throughout the country. FDOH has made multiple efforts to reach out and establish consistent reporting. To date no further response has been returned by the VA. The FDOH-FCDS will continue our efforts to reengage the VACCR.

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CANCER REGISTRY NAME: Georgia Cancer Registry
FOCI: Collaborative Partnership/Improve Pediatric Cancer Reporting Timeliness
TITLE: Working Together to Improve Pediatric Cancer Reporting
AUTHORS: Rana Bayakly, Sheree Holloway, Chrissy McNamara

SUMMARY: Pediatric cancer clusters calls are very common for the Georgia Cancer Registry (GCR), yet delays in cancer reporting affect investigating these cases. GCR collaborated with the Georgia Department of Public Health (DPH), Birth Defect Registry (BDR) and Newborn Surveillance Team to improve on reporting malignancies at birth. Since then BDR shared two diagnosed malignancies cases at birth with GCR.

CHALLENGE: GCR receives many calls on suspected high number of childhood cancers in south and south-east Georgia. The majority of these calls are for cases diagnosed within the past few months of the call. The GCR epidemiologist's responsibility is to investigate these cases by analyzing GCR database for previous diagnosis years. Frequently, the GCR epidemiologist contacts the specific cancer regional coordinator and facilities to confirm unreported cases. Additionally, the GCR Director contacts other states to follow up on cases that were diagnosed and/or treated out of state as part of the investigation. Assessing cases during the cancer investigation is time consuming and most often does not result in confirming cases that meet Georgia's cancer cluster criteria.

SOLUTION: To improve on childhood cancer reporting timeliness, and reduce the time to investigate cases, GCR collaborated with the DPH-BDR. BDR agreed to share a data file including all reported birth defects from 2010 to present with the GCR. The GCR will link the two databases to identify any missed cases and to improve on identifying risk factors associated with childhood cancer. Also BDR and GCR established a process of sharing new malignancies diagnosed at birth as reported to the BDR within 30 days of diagnosing the malignancy.

RESULTS: From January 1 to June 30, 2018 two newly diagnosed malignancies were reported to the GCR by the BDR epidemiologist. GCR cancer regional coordinator confirmed the diagnosis with the reporting facilities and were submitted to the GCR within 2 weeks of contacting these facilities. Additionally, the cancer regional coordinator conducted a case-finding audit targeting childhood cancer. As a result, 19 childhood cancers were identified and reported for 2016 and 2017 diagnosis years.

SUSTAINING SUCCESS: By June 30, 2018, conduct one pediatric cancer training targeted hospital staff for reporting childhood cancer. Additionally, it will be important to establish an on-going collaboration for reporting malignancies diagnosed at birth by BDR to the GCR.

CANCER REGISTRY NAME: Nebraska Cancer Registry

TOPIC: Pediatric cancer disparities

TITLE: Examining the Disparities of Pediatric Cancer Incidence Using Early Case Capture Data

AUTHORS: Lifeng Li, Ming Qu

SUMMARY: Recent data have shown that Nebraska has higher incidence of pediatric cancers than the national average. To better understand the latest pattern and burden of pediatric cancers in Nebraska, we use the Early Case Capture (ECC) data to analyze the incidence of pediatric cancers and examine the disparities by demographics and geographic locations. We found a total of 602 cases of invasive pediatric cancers among children and adolescents in Nebraska from 2012 to 2017, which can be translated into an age-adjusted incidence rate of 191.3 cases per 1,000,000 population. The incidence rates of three most commonly diagnosed types of pediatric cancers-Brain and other Central Nervous System tumors, Leukemia, and Lymphoma-are all higher in Nebraska than those of the United States. Consistent with several studies on pediatric cancers, the incidence of pediatric cancers also distributed differently by demographics and geographic locations in Nebraska. The ECC data allow us to detect the latest pattern of the pediatric cancer in Nebraska and provide up-to-date information to guide future public health planning, research, and interventions. To sustain the success, we are about to expand the ECC data items by linking them with other databases such as American Community Survey (ACS) to identify correlates of the disparities in pediatric cancer incidence in Nebraska.

CHALLENGE: Cancer is the second leading cause of death among children ages 1 to 14 in the United States. In 2016, about 15,681 children and adolescents ages 0 to 19 were diagnosed with cancer and about 1,920 children at the same age range died from cancer[1]. Data from United States Cancer Statistics show that the average incidence of pediatric cancer in Nebraska slightly exceeds the national average from 2011-2015 (195.3 versus 186.1 per 1,000,000 population)[2]. Recent study also showed geographic variation of the incidence of pediatric cancers in Nebraska[3]. To better understand the latest pattern and burden of pediatric cancers in Nebraska, we need up-to-date data to analyze the incidence of pediatric cancers and examine the disparities of the incidence by demographics and geographic locations. But the majority of studies and reports on pediatric cancer in Nebraska and the United States used data up to 2015 [3, 4].

SOLUTION: The availability of the Early Case Capture (ECC) data makes it feasible to examine the latest pediatric cancer burden in Nebraska. The Early Case Capture (ECC) program was initiated by CDC in 2012 and aims to improve pediatric cancer research by increasing the speed and quality of cancer case reporting. Nebraska was one of the seven state cancer registries who were awarded for funding of the Early Case Capture (ECC) program by CDC. Under ECC program the new pediatric cancer cases are required to be reported within 30 days of diagnosis. Therefore, the ECC program allows us to collect and analyze pediatric cancer data up to 2018.

RESULTS: We found a total of 602 invasive pediatric cancer cases among children and adolescents in Nebraska from 2012 to 2017. Overall, pediatric cancers account for about 1% of the total number of cancer diagnoses among Nebraska residents. Between 2012 and 2017, the most frequently diagnosed pediatric cancer in Nebraska was brain and other Central Nervous System tumors (including benign cases) (about 55 cases per 1 million population), followed by leukemia (about 51 cases per 1 million population) and lymphoma (about 30 cases per 1 million population). We also found that the pediatric

cancer incidence differs by age, race/ethnicity, and regions in Nebraska. Infants (younger than 1 year old) tended to have the highest pediatric cancer diagnoses among children age 0-19 in Nebraska. The lowest incidence rate occurred among children ages 10-14. Leukemia were the most commonly diagnosed pediatric cancer among children under 5 years old and brain and other Central Nervous System tumors were mostly diagnosed among children of 5 to 14 years old. Non-Hispanic White had the highest incidence rates of pediatric cancer from 2012 to 2017. In terms of geographic variation, we found that the southwest and central of Nebraska had higher pediatric cancer incidence compared with other regions. Data from the ECC program provide the most up-to-date source of information concerning the burden of pediatric cancer in Nebraska.

SUSTAINING SUCCESS: The ECC data allow us to track the latest pattern and examine the disparities of the pediatric cancers incidence in Nebraska. The information would be useful for pediatric cancer prevention and control in Nebraska. It is only the first step to detect the incidence of pediatric cancers, further analysis can be done to examine the correlates of the pattern and disparities of pediatric cancer incidence. In the near future, we are planning to expand the ECC data items by linking them with other available database such as American Community Surveys (ACS) or Hospital Discharge Data in order to enhance ECC data utilization.

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CANCER REGISTRY NAME: Nevada Central Cancer Registry (NCCR)

FOCI: Electronic Laboratory Reporting: Promising Practices and Achievements

AUTHORS: Christine Pool, Program Manager; Rani Reed, Business Process Analyst

SUMMARY: NCCR has worked diligently the past several years on improving cancer reporting experiencing success in increasing provider reporting, passage and implementation of more clear language of the Nevada Revised Statutes (NRS) and Nevada Administrative Code (NAC), and becoming part of the Interstate Data Exchange. In 2018, NCCR recognized the need to focus on laboratory reporting.

The majority of Nevada laboratory reports come from national laboratories in an HL7 format. Since the implementation of the Registry Plus suite in 2014, eMaRC was used primarily as a method to receive HL7 pathology files for export. In February 2018, NCCR staff began to learn more about eMaRC and the imported laboratory reports. With thorough evaluation of all imported records, proper coding, and training from CDC consultants, NCCR staff was able to increase the number of useable pathology reports.

NCCR uses costly HL7 translation software for laboratories who are unable to provide reports in the HL7 format. This translation software has become cost prohibitive to the registry. There are 3 remaining hospital laboratories who rely on this software. The registry made it a priority to work with the laboratories to find a solution. A national laboratory that also provides laboratory services to these hospitals offered assistance and guidance to implement a reporting solution that meets national reporting standards. NCCR anticipates automatic HL7 feeds by the end of the grant year.

NCCR is making great strides working with the largest hospital system in Northern Nevada, which has been a non-reporter, to provide in-house pathology reports for hospital and non-hospital records through an EPIC Electronic Health Records (EHR) system platform. Work began in March 2018 and NCCR will begin receiving electronic HL7 reports though an automatic feed to the state SFTP site by the end of October 2018.

With technical assistance from the CDC, the registry is working with a nationwide laboratory to receive HL7 reports. This laboratory is one of the laboratories who relied on NCCR's translation software to report. Weekly meetings began in September 2017 to monitor progress and the team has made great headway finding an interim solution to provide records in the HL7 2.5.1 format delivered through an SFTP site eliminating the need for NCCR's software. The next step of the process will be to deliver the pathology files through Nevada's Association of Public Health Laboratories (APHL) Informatics Messaging Services (AIMS). This software receives automated transmissions of reportable laboratory findings via laboratory information management systems or electronic health records systems sent from commercial, public health, hospital, and other labs to state and local public health departments. This is an established and proven method of HL7 reporting that can integrate cancer reporting. Nevada will be the pilot state and, if successful, a model will be developed which could be rolled out nationally to other states or laboratories.

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CHALLENGES:
- Through record evaluation in eMaRC, the registry identified many miscoded records due to incorrect formatting of pathology reports from a national laboratory requiring time consuming review and correction.
- Costly in house HL7 translation software that the registry discontinued.
- Staff turnover at facilities which slowed the progress of laboratory reporting.
- Time consuming paper pathology report processing.
- Time consuming cleaning of data for linkages.
- Missed pathology cases in previous years due to incomplete or incorrect coding not identified until 2018.

SOLUTIONS:
- Registry staff met with national laboratory to review problems with filtering and incorrect formatting of HL7 reports.
- NCCR staff worked closely with CDC consultants to initiate work with a national laboratory developing the APHL-AIMS solution.
- NCCR staff attended multiple CDC eMaRC training sessions and received technical assistance.
- Review of every eMaRC record to make sure records were accurate and usable.

RESULTS:
- NCCR staff suggested eMaRC enhancements which were included in the latest patch release.
- Increase in the number of usable pathology reports.
- More complete consolidated tumor records due to information from the increased number of pathology reports.
- NCCR is receiving pathology cases previously not reported.
- Development of the pilot for APHL-AIMS reporting.
- Improved ability to conduct timely follow back and audit.
- Increased knowledge of external systems and reports.
- Development of more efficient ways to process pathology reports.

SUSTAINING SUCCESS:
- Seek out additional non-reporting laboratories or facilites who are not able to provide electronic reporting to replicate processes which assisted other laboratories in becoming compliant with national standards.
- Continue to refine the pathology flow to maximize results.
- Continue to work closely with CDC consulting staff to seek more efficiencies in pathology processing.
- NCCR will continue to seek funding to staff a full-time person to be solely dedicated to pathology onboarding and processing.

CANCER REGISTRY NAME: New Jersey State Cancer Registry

TOPIC: Electronic Reporting

TITLE: Finding Meaning in Meaningful Use

AUTHORS: Stephanie M. Hill, MPH, CTR; Jamal D. Johnson, BS, CTR; Antoinette M. Stroup, PhD

SUMMARY: The New Jersey State Cancer Registry (NJSCR) declared its readiness for Meaningful Use (MU) in 2014 and began receiving test data from physician practices in 2015. Since then, 129 practices have submitted test data, and 15 are actively in production. NJSCR staff analyzed MU production data in collaboration with the SEER*DMS Meaningful Use Workgroup to determine its value for (a) identifying previously unreported cases of cancer; and (b) updating or adding information to previously reported cases.

CHALLENGE: Hospitals account for almost 90% of all cancer cases submitted to the NJSCR. However, in recent years there has been a trend toward diagnosis and treatment exclusively in the outpatient setting, particularly for certain cancers. Enforcing consistent reporting from outpatient facilities has been a significant challenge. Incomplete reporting by outpatient facilities and private physician offices may result in an underreporting of certain cancers, particularly cancers of the skin and urinary tract and hematopoietic diseases such as myelodysplastic syndromes.

SOLUTION: NJSCR reviewed a sample of MU cases for the 2016 and 2017 diagnosis years and compared them to cases already submitted to NJSCR from other reporting sources. MU data from dermatology and medical oncology practices was analyzed separately to determine the proportion of MU cases that resulted in either (a) new incident cases; or (b) new or updated diagnosis or treatment information for existing cases. The quality of the data contained in the MU files was also compared to data submitted by physician practices via Registry Plus Web Plus software.

RESULTS: Of the 74 sampled MU cases submitted by dermatology practices, 20 (27.0%) resulted in new incident cases and 19 (25.7%) added new or corrected information, such as diagnosis date or treatment, to existing cases. A similar review of 100 cases from medical oncology practices identified 35 (35%) new incident cases and 27 (27%) supplying new or updated information. The quality of the MU data also compared favorably to that of Registry Plus reporters, with the MU data containing more complete tumor characteristics and treatment information.

SUSTAINING SUCCESS: Although cancer reporting is not a requirement under the current Meaningful Use program, the NJSCR recently amended its cancer reporting rules to allow MU reporting to satisfy physicians' statutory obligations to report to the NJSCR. Based on a review of a sample of incoming cases, MU data could serve as an important source of previously-unreported cancer cases, particularly for certain sites. Given the quality of the MU data, the NJSCR plans to encourage reporting through MU as a part of an upcoming communications campaign to increase physician compliance with cancer reporting requirements.

The increase in MU reporting may present several challenges to sustaining success, most notably: (1) ensuring the quality of the MU data; (2) incorporating automated processes into the registry workflow to incorporate large volumes of MU data with minimal impact on workload of staff; (3) addressing potential changes in cancer incidence trends due to the introduction of new data sources and delayed reporting; and (4) managing server space to accommodate large files. The NJSCR is working with Information Management Services, Inc. (IMS), the developer of the SEER*DMS software, and with representatives from other state registries to address these challenges.

CANCER REGISTRY NAME: South Dakota Cancer Registry
TOPIC: Clinical Trial Collaborative Project
TITLE: Collaboration to Improve Clinical Trial Participation in South Dakota
AUTHOR: Kay Dosch

SUMMARY: The South Dakota Cancer Coalition developed the South Dakota Comprehensive Cancer Control State Plan 2015-2020 in an effort to establish an actionable framework to reduce the burden of cancer in South Dakota. One of the established priorities of the plan was to increase participation in cancer clinical trials and a workgroup was formed to develop strategies. The workgroup needed to establish the current clinical trial accrual rates within South Dakota to establish a baseline for measurement.

The South Dakota Cancer Coalition approached the South Dakota Cancer Registry (SDCR) and asked if it would be willing to form a partnership to work collaboratively to obtain South Dakota clinical trial data from the hospital-based cancer centers. The SDCR agreed to request the data from the hospital-based cancer registries with the knowledge that this reporting would be voluntary. The SDCR assured the hospital-based cancer registries that the individual hospital-based data would be held in confidence and only aggregate data would be shared.

In 2015, the clinical trial data collection began with 100% of the South Dakota hospital-based cancer registries reporting data for two consecutive years, 2013 and 2014. This 100% response rate continued in 2016 and 2017 with data being reported for years 2015 and 2016 respectively. With four years of data, analysis was completed to examine the South Dakota clinical trial data trends and barriers to participation. With identification of the challenges regarding clinical trial participation, a better understanding will help to develop strategies that will promote clinical trials at the South Dakota hospital-based cancer centers. A presentation was developed and shared with stakeholders in South Dakota to promote clinical trial awareness. Going forward, measurement of the clinical trial accrual rates continue to be reported to the SDCR and the 2017 data was received in 2018.

CHALLENGE: One of the priorities of the South Dakota Cancer Coalition in the South Dakota Comprehensive Cancer Control State Plan 2015-2020 was to increase participation in cancer clinical trials at the South Dakota cancer centers. A workgroup was established to develop strategies. The challenge was to collect statewide clinical trial data to establish a baseline for measurement as well as collect this data annually to measure progress and impact.

SOLUTION: The South Dakota Cancer Registry (SDCR) was asked to collect the clinical trial data from the South Dakota hospital-based cancer centers. The SDCR was the natural choice since it is a trusted entity in South Dakota and the framework already existed for confidential reporting. The SDCR assured that the reported clinical trial data would be secure, confidential, and only shared in aggregate. The coalition workgroup developed a reporting collection template that aligned with the Commission on Cancer Standard 1.9 to streamline reporting efforts, which the SDCR utilized to collect the data.

RESULTS: The South Dakota cancer centers participated in the voluntary reporting of clinical trial data at 100% for data years 2013 – 2016. Data analysis on the four years of data was completed to better understand the South Dakota clinical trial data trends and barriers to participation. A presentation was developed and shared with stakeholders in South Dakota to promote clinical trial awareness. A publication featuring the data analysis and recommendations is currently under development.

SUSTAINING SUCCESS: The inclusion of this priority within the South Dakota Cancer Plan helps ensure cancer clinical trial participation remains a focus in South Dakota. The objective to collect the clinical trial data at the SDCR continues with the voluntary reporting of the 2017 data in 2018 from the hospital-based cancer centers.

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CANCER REGISTRY NAME: Tennessee Cancer Registry (TCR)

TOPIC: Public Health Impact

TITLE: Greene County Cancer Cluster Investigation

AUTHORS: Sumeda Abeykoon (TCR Intern); Dr. Martin Whiteside

SUMMARY: Over the last few years, the TCR has hosted a number of interns that have enabled the TCR to complete requested cancer cluster investigations despite the severe limitation of qualified epidemiologic staff to complete such investigations. The TCR collaborated with the Northeast TN Department of Health Regional Office on a potential cluster investigation reported to them by a concerned citizen. The concern was related to a U.S. Nitrogen facility located in the county. We performed our analysis at the census tract level. We used the chi-square statistical procedure, calculated age-adjusted rates and performed hot spot analysis using Arc-GIS. Chi-square statistical analyses yielded no significant findings between adjacent census tracts or to Greene County as a whole or Sullivan County. Calculation of age-adjusted rates yielded only two statistically significant results: one involving higher rates of lung cancer for the referent tract compared to Sullivan County and the second for higher rates of bladder cancer in the referent tract versus another census tract. All other analyses were not statistically significant. Hot spot analysis yielded only one hot spot located in southwestern Sullivan County. Conclusively, these results do not support the presence of a cancer cluster in the census tract of the U.S. Nitrogen facility. This was a successful collaboration between the TN Department of Health's central office and the Northeast TN Regional Office.

CHALLENGE: The main challenges are two-fold: insufficient epidemiologic staff at the TCR and training an intern in the public health practice of performing a cluster investigation.

SOLUTION: The solution to the first challenge of insufficient staff is to collaborate with academic centers locally to host interns. In this case, the TCR hosted a master's level biostatistics student needing to complete a course practicum. A solution to the second challenge of training an intern is having a standardized assortment of training materials already on-hand to provide to the intern for training purposes. These materials are very extensive and usually take the intern one to two weeks to completely digest.

RESULTS: Interns are a good resource for completing important projects in low-resource environments, while at the same time allowing the intern to complete course requirements and apply didactic information in a practical setting.

SUSTAINING SUCCESS: TCR staff will continue to partner with local academic centers allowing students to complete internships at the TN Department of Health's TCR. Therefore, the TCR will host at least one intern per year that will enable the TCR to complete at least one important project that would otherwise be difficult given current staffing levels.