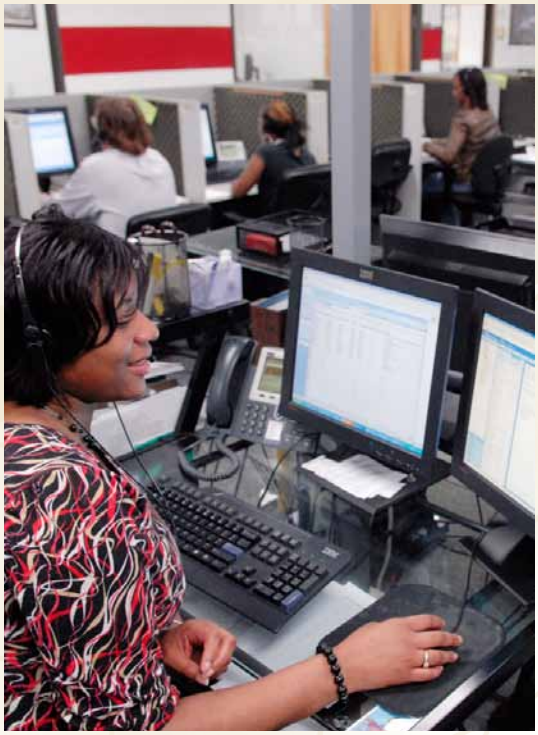
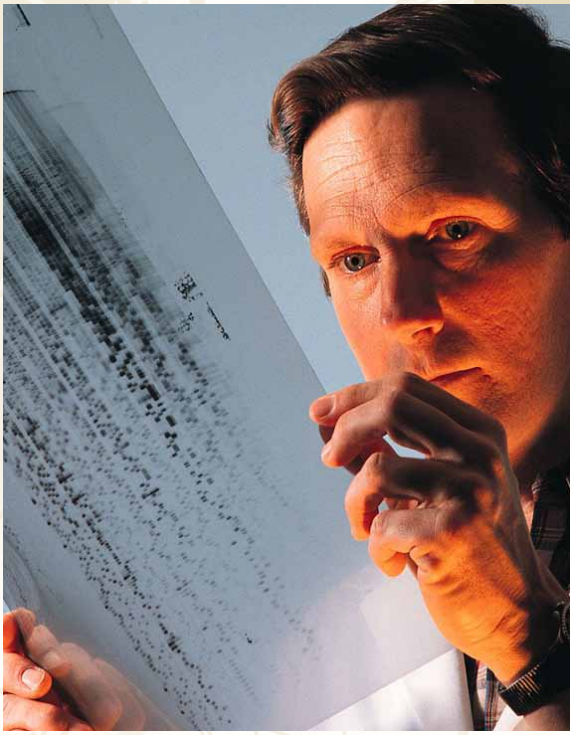
Cancer Research





At RTI International, our experts in health research recognize that cancer is not one disease, but many conditions with different causes and outcomes. Our multidisciplinary team of health professionals works with federal, state, academic, and private partners both nationally and internationally to understand the factors that increase cancer risk and to develop, employ, and promote effective strategies to reduce the burden of cancer and eliminate cancer health disparities.

RTI INTERNATIONAL

Our Expertise

Survey Research and Data Collection

RTI's team of experts designs and conducts a variety of national and international cross-sectional and longitudinal cancer studies. We offer a range of data collection capabilities and maintain an active national interviewer file database with over 150 field supervisors and 10,000 field interviewers. We conduct one-on-one personal interviews, computer-assisted telephone interviews (CATI), mail surveys, mixed-mode surveys, focus groups, and electronic data capture. We also perform record abstraction and design and conduct Web-based interviewing and Web panels.

Biological and Environmental Sample Collection, Processing, and Analysis

RTI can obtain cost-efficient, high-quality biological and environmental samples. We routinely collect samples in clinical and home settings and often via mailed kits. RTI's laboratories support research in proteomics, biomarkers of exposure, cell immortalization and culturing, and analysis and monitoring of environmental samples.

Health Statistics and Biostatistics

RTI offers services in every aspect of survey design and analysis called for in cancer-related studies, including sample design, design optimization, experimental design, nonresponse analysis and weight adjustment, imputation, and analysis techniques. Our statisticians created an innovative software package, SUDAAN®, for the statistical analysis of complex clinical and biological data. Our programmers and analysts provide statistical support using a variety of programming languages, statistical packages, and database management tools.

Health Information Technology and High-Performance Computing

RTI has developed high-performance computing capabilities to deal with the massive amounts of data and the extensive calculations involved in the analysis of biological and health data related to cancer. We have developed personal monitoring systems using mobile personal digital assistant (PDA) and smart phone technologies that integrate physiological and physical sensor data with activity, dietary, substance use, and environmental diaries for ecological momentary assessment of health, behavior, and environmental stressors.

Epidemiology

RTI epidemiologists perform research on the incidence, prevalence, risk factors, and etiology of cancer. They define eligibility criteria, identify appropriate study populations, and conduct research to illuminate the complex interactions of the environment, exposure, and disease. We provide expertise in the design and implementation of case-control, cohort, and cross-sectional-based epidemiologic research studies. Our expertise in computational epidemiology allows us to use computer simulations to refine our understanding in this area.

Bioinformatics and Computational Biology

RTI's multidisciplinary team offers a depth of bioinformatics and computational biology expertise that includes bioinformatics tool development such as Cancer Biomedical Informatics Grid (caBIG) software development and implementation, custom solutions for microarray and protein expression and metabonomics analysis, genetic linkage and association analysis (genome-wide association studies), development of laboratory information management systems (LIMS), large-scale relational database and data warehouse construction, and simulation and agent-based modeling.

Data Management and Data Coordination Centers

For three decades, RTI has served as the Data Coordinating Center (DCC) for more than 25 multisite studies. As the DCC, we provide statistical guidance during the initial study design and throughout implementation; design and provide the data capture and data management systems; coordinate and monitor data collection and data management activities; provide reports to the governing and oversight bodies of the study and the funding agency; facilitate communication among all researchers, core laboratories, and funding agencies; manage study logistics; and maintain standardization and quality control across sites.

Health Services Research

RTI researchers explore how health systems, societal factors, medical technologies, health care policies, and personal behaviors affect the entire continuum of cancer care, including prevention, screening and diagnosis, treatment, survivorship, and palliation and end-of-life care. We evaluate patterns of medical care and patient outcomes (e.g., timeliness and comprehensiveness of care given cancer diagnosis); assess quality of care, costs, and cost-effectiveness; study barriers in access to care and disparities in health outcomes; and examine decision making by patients and providers.

Geospatial Science and Technology

RTI provides a full range of geographic information system (GIS) services to support our federal clients. We use cartographic modeling techniques to model medical service markets, cancer risk factors, cancer incidence and mortality rates, and other health outcomes to support research objectives. We develop models to estimate human population health risks and model the potential for exposure to environmental contaminants. We use GIS and information technology to map cancer incidence and mortality rates, analyze and manage geospatial environmental data, and develop mapping systems to support large-scale household surveys and epidemiologic studies related to cancer.

Health Economics

RTI applies health economics and operations research to design, implement, analyze, and evaluate health care policy, with emphasis on programs and interventions aimed at eliminating cancer risk factors and improving health and quality of life. We analyze cost of illness, cost effectiveness, cost utility, cost benefit, resource allocation, and prevention effectiveness.

Comparative Effectiveness Research

RTI researchers produce rigorous systematic reviews on topics related to cancer prevention, diagnosis, treatment, and care management. We analyze relevant scientific literature using state-of-the-art methods and conduct studies using electronic and survey data to compare the outcomes of therapies used for treating various types of cancer.

Health Communication and Health Promotion

RTI uses a variety of qualitative and quantitative methods to develop, test, disseminate, and evaluate health and risk communication messages directed at target audiences. These include formative message development, focus groups and case studies, materials design, cognitive and usability testing, process and outcome evaluations, experimentally designed studies, and large-scale data collection and statistical analysis of cancer-related data.

Program Evaluation

RTI offers expertise in program evaluation, a research approach that provides formative feedback to inform programmatic decision making and summative feedback to inform policy development, effective allocation of resources, sustainability, and potential for program replicability. We have extensive experience in developing program evaluation plans and logic models to determine linkages between program activities and subsequent short-term, intermediate, and long-term outcomes. To assess the success of program activities in reaching intended outcomes, we use our knowledge and experience in mixed-method approaches to collect and analyze data, conduct in-depth qualitative interviews, moderate focus groups, assess primary and secondary data sources, and develop, test, and disseminate large-scale surveys.

Selected Research Projects

Computer-based Clinical Decision Support (CDS) Tools for Gene-based Tests Used in Breast Cancer. For this project, RTI develops and evaluates CDS tools for gene-based tests on breast cancer susceptibility and treatment. The project includes three major phases: literature review, tool development, and tool evaluation.

Interventional Fluoroscopist Occupational Health Study. RTI is providing a range of support for this National Cancer Institute (NCI) mortality study of physicians occupationally exposed to radiation from interventional fluoroscopy to evaluate cancer risks associated with radiation exposure. Support includes obtaining medical society and American Medical Association data, determining eligibility, identifying and confirming vital status, ascertaining cause of death, and creating analytic data sets for mortality analyses.

Cancer Risk in Retinoblastoma Patients. This NCI study identifies the risk of second tumors and modifiers of cancer risk in survivors of hereditary retinoblastoma. RTI is performing annual mortality follow-up, acquiring coded cause of death for decedents, and confirming cancer diagnoses.

National AIDS—Cancer Registry Match. For this NCI study, RTI is collaborating with national AIDS and cancer surveillance registries in 10 U.S. states to investigate whether malignancies other than non-Hodgkin lymphoma and Kaposi sarcoma are associated with HIV infection and to quantify the risks.

Measuring Patient-Centered Communication in Cancer Care. RTI is working with the NCI and AHRQ to develop survey items to assess patient-centered communication that can be used for quality monitoring, population surveillance, and intervention research. RTI conducted formative research, refined a theoretical model of patient-centered communication and measurement domains, developed an item pool, and tested items with cancer patients.

Geospatial Factors and Impacts: Measurement and Use. In this NCI grant, RTI examines determinants of screening for breast and colorectal cancer among large retrospective cohorts of the elderly population by combining information from Medicare claims with our newly constructed contextual geospatial variables.

WebCGH v1.0 Enhancements in Support of the NCI Center for Bioinformatics. RTI developed the Web-based software tool WebCGH for the analysis and visualization of microarray-based comparative genomic hybridization data.

Evaluation of Community Cancer Centers Program Pilot Study. This NCI study evaluates the effectiveness of a pilot program intended to bring the most advanced cancer care to patients in 16 community-based cancer centers nationwide. This project involves a longitudinal case study, patient survey and focus groups, and economic studies to assess program development and implementation.

Evaluation of Comprehensive Approaches to Cancer Control (CCC). This Centers for Disease Control and Prevention (CDC) study evaluates activities performed by programs funded through the Division of Cancer Prevention and Control. Core elements of the CCC evaluation involve performance measure development and pilot testing, assessment of existing Cancer Control Plans, and development of a menu of existing outcomes for programs to incorporate into their local evaluation efforts.

How Much and Who's Paying for Cancer Prevention and Treatment Services in the US? RTI is using the econometric (regression-based) modeling approach to estimate the costs associated with cancer. The analyses rely on data from the Medical Expenditure Panel Survey and state Medicaid databases alone, and these databases linked to cancer registry and Medicare and Medicaid data.

Economic Evaluation of CDC's Colorectal Cancer Screening Demonstration. RTI is using activity-based cost data collected via a Web-based tool to perform cost and cost-effectiveness evaluations of the participating programs. A thorough assessment of start-up and implementation costs is being done to identify lessons for future program development.

More Information

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