

Creating Structured Evidence Queries for Healthy People 2020 National Objectives

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National Information Center on Health Services Research and Health Care Technology (NICHSR)

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Executive Director Research Medical Library – The University of MD Anderson Cancer Center

Kezzie Joseph, MHA, Health Project Coordinator for United Way of Atlanta

Annette Nahin, Librarian, National Library of Medicine -MEDLARS Management Section

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Abstract

Creation of Structured Evidence Queries for Healthy People 2020 National Objectives

OBJECTIVE:

The purpose of this project is to develop PubMed Structured Evidence Queries (SEQs) for the twenty objectives in the Cancer topic area of Healthy People 2020 (HP2020) for use on <http://phpartners.org> Web site. This provides the public health workforce the ability to use PubMed search strategies in order to implement programs that help meet the national objectives of Healthy People 2020.

METHODS:

An Associate Fellow with beginner level searching skills participated in the NLM *PubMed for Trainers* course during the month of March 2012 to obtain a functional knowledge of the MEDLINE database, understand the structure and use of Medical Subject Heading (MeSH) vocabulary in PubMed, gain expertise in the use of features of the PubMed system and to learn techniques and best practices in MEDLINE/PubMed instruction. Using this course as a baseline, PubMed search strategies were developed for the objectives. A brief note was made for any search strategy prone to raise questions during the review process. A Public Health expert in cancer was assigned by the Office of Disease Prevention and Health Promotion (ODPHP) to review the search results.

RESULTS:

Search strategies for 18/20 of the Healthy People 2020 objectives were developed by the Associate Fellow. The ODPHP Reviewer was not available to review the searches in a manner timely for the completion of the project by the Associate Fellow. In lieu of the assigned reviewer, 3 volunteer reviewers provided feedback. This feedback offered concrete and useful information, however time limitations would not permit searches to be revised by the Associate.

CONCLUSIONS:

Structured Evidence Queries (SEQs) were developed by a novice searcher. The unofficial feedback provided by volunteer reviewers was helpful for the skill building of searcher. At the same time, unofficial feedback did not guarantee that there would not have been additional revisions according to feedback from the ODPHP reviewer. The SEQs created will still need to undergo review and iterative processes from official reviewer.

Introduction

“Healthy People 2020 provides a comprehensive set of 10-year, national goals and objectives for improving the health of all Americans. Healthy People 2020 contains 42 topic areas with nearly 600 objectives (with others still evolving), which encompass 1,200 measures” (HealthyPeople.gov). These national goals and objectives were developed by the United States Department of Health and Human Services (DHHS) in conjunction with other federal agencies, public stakeholders and an advisory committee. Healthy People follows a model of establishing national health objectives and then providing the information and the tools to enable any community, group or individual to achieve the objectives.

During the previous 10 year initiative, Healthy People 2010, an Information Access Project was designed to make information, resources, and evidence based strategies related to the Healthy People 2010 objectives easier to find. Librarians from the NN/LM and the Medical Library Association’s Public Health/Health Administration section and subject matter experts from CDC and the public health workforce joined the project team to develop Structured Evidence Queries for many of the Healthy People 2010 objectives. (phpartners.org, 2011)

As described by the Project Sponsor, the National Information Center on Health Services Research and Health Care Technology (NICHSR), a component of the National Library of Medicine (NLM), has been working with other federal government agencies involved in public health to organize and develop important information resources for the public health workforce. This initiative is the focus of the Partners in Information Access for the Public Health Workforce (PIAPHW) (<http://phpartners.org>), also know at “Partners.” Partners is a collaboration of U.S. government agencies, public health organizations and health sciences libraries. The mission of this collaboration is to help the public health workforce find and use information effectively to improve and protect the public’s health.

The Cancer topic area lies within the 42 topic areas, and nearly 600 objectives in Healthy People 2020. The goal of the cancer objectives is to reduce the number of new cancer cases as well as the illness, disability, and death caused by cancer (Healthy People 2020).

The purpose of this project was to develop PubMed Structured Evidence Queries (SEQ) for the 20 cancer objectives (see Appendix C). Two of the cancer objectives have sub-objectives which results in 27 searches. The Associate embarked upon this project with beginning level search skills. “HP2020 SEQs are special preformulated PubMed searches for HP2020 objectives. The purpose of the HP2020 SEQ is to make it easier for people working to achieve HP2020 objectives to quickly find current information from published and evidence-based literature” (Healthy People 2020 Structured Evidence Queries).

The time frame of this project was scheduled from February 2012 – June 2012.

Methodology

The Associate enrolled in and completed a PubMed® for Trainers course during the month of March 2012. This course comprised of 4 sessions (three 2-hour online sessions and one in person 7-hour session). This provided the Associate with additional knowledge of the MEDLINE ® database, in depth understanding of the structure and use of Medical Subject Heading (MeSH) vocabulary in PubMed, and to gain expertise in the use of features of the PubMed system.

A search typically began with the MeSH term of Neoplasms with an appropriate subheading if applicable added to the PubMed Search Builder. The search was the built upon according to the objective. PubMed Help (PubMed Help NCBI Help Manual) was referred to for clarification of search field descriptions and tags.

Once a search was completed, the Associate reviewed the results to ensure that the yield was relevant to the need of the public health workforce according to the Reviewer Guidelines (Appendix B). When the search results appeared accurate, the search strategy was forwarded to the Project Sponsor who was responsible for creating an HTML page for the search and making the initial contact with the ODPHD assigned reviewer (Figure 1 provides a workflow process for a developed search to become a SEQ).

The searches were to be reviewed by a Public Health expert in cancer as assigned by the Office of Disease Prevention and Health Promotion (ODPHP) and then revised in an iterative process according to how well the search results matched the needs of the public health practitioners. This process when completed for each search strategy would compile the Structured Evidence Queries (SEQs) for the cancer objectives.

From Search to SEQ

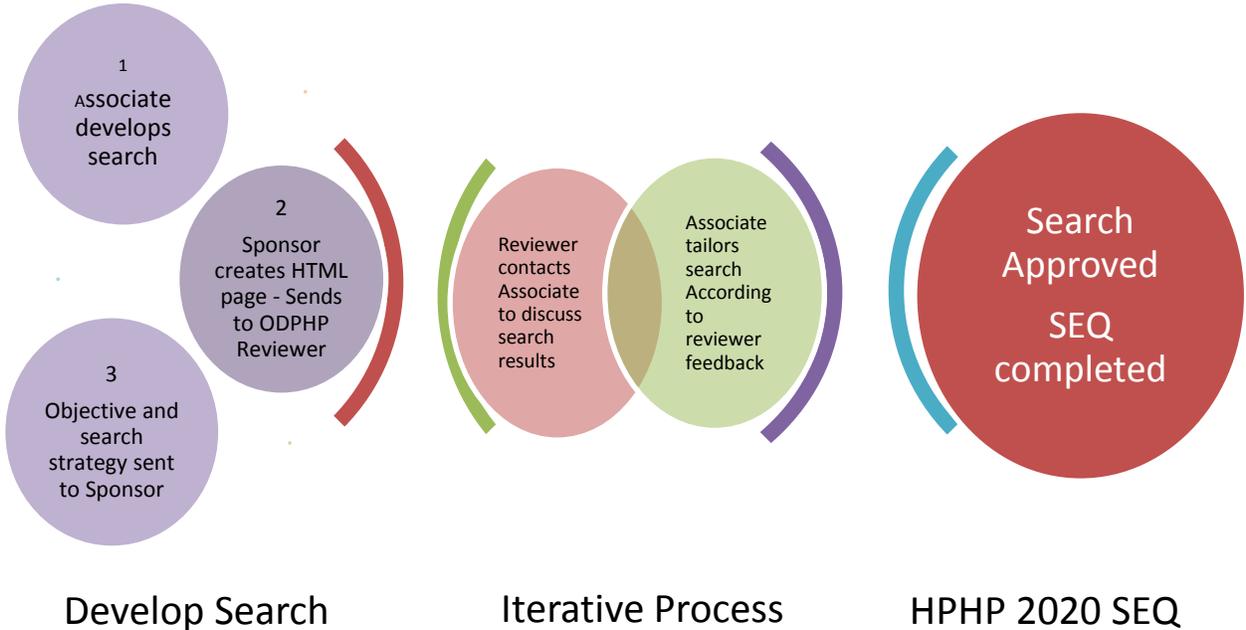


Figure 1: From Search to SEQ

Results

Search strategies using the PubMed search builder and were developed for 18/20 cancer topic objectives (Appendix D). A brief note was made for any search strategy prone to raise questions during the review.

A delay in response from the ODPHP assigned reviewer was reported to the Associate by the Project Sponsor. The lack of input from the assigned reviewer resulted in the omission of feedback for the searches completed by the Associate. In addition, the searches were unable to be posted to the HP2020 SEQ Web site until official review occurred.

In order to provide the Associate with feedback from developed searches, combination of medical librarians and public health professionals were sought out and asked to review the searches according to the Reviewer Guidelines (Appendix B). Three of the seven professionals that were asked provided feedback on specified searches (two medical librarians and one Public Health Practitioner). The objective of the medical librarians in reviewing searches was to provide feedback regarding PubMed syntax and MeSH vocabulary according to the results yielded. The objective of public health professional reviewing searches was to determine the usefulness of the search results according to how relevant the information was in helping in the creation of a program to meet the objective.

Feedback was provided by the two medical librarians and the public health practitioners who agreed to review specified search results. Due to the limitations in time however, this feedback could not be incorporated into the developed searches.

At the time of this writing, official feedback had not been provided by reviewer.

Objectives C1, C12 and C13 were reviewed. The Associate wanted to analyze the combined feedback from a librarian and public health professional for the same objective in order to obtain varying points of view (see Figure 3).

The following searches were reviewed:

OBJECTIVE C1: *Reduce the overall cancer death rate*

Search Strategy: Neoplasms/mo[major:noexp] AND (pc[sh] OR primary prevention[mh] OR SEER program[mh] OR tertiary prevention[mh] OR secondary prevention[mh] OR life style[mh] OR prevention[tiab] OR reduction[tiab] OR community health services[mh] OR health education[mh] OR risk reduction behavior[mh] OR health promotion[mh] OR health policy[mh] OR patient education as topic[mh] OR program evaluation[mh] OR public health[majr:noexp] OR Health services research[mh] OR public health agency OR public health practice[mh] OR program*[tiab] OR "community-based") AND (humans[mesh] AND English[la]) AND (united states[mh] OR usa[ad]) AND "last 5 years"[dp]

Reviewed by: *Stephanie Fulton, MSIS, AHIP*
Executive Director
Research Medical Library – The University of MD Anderson Cancer Center

The medical librarian reviewing this search indicated that most of the articles seemed to be on topic. She expressed concern with use of (united states [mh] or usa [ad]) as a way to limit to US specific articles and indicated that when those two elements were removed, there were 199 eliminated articles – many with relevance. She then provided suggestions on how to alter the search to yield a tighter group of relevant results.

In addition, the librarian introduced the concept of the PICO question to better understand the objective. A PICO question is used in the evidence-based decisions making process represents each of the following concepts:

- (P) patient, problem or population
- (I) intervention
- (C) comparison
- (O) outcome

The PRESS (Peer Review of Electronic Search Strategies) Checklist was also introduced to provide additional feedback on the search strategy. Having these resources introduced by a seasoned medical librarian provided the Associate with additional valuable information for self-guided learning.

OBJECTIVE C12: *Increase the number of central, population-based registries from the 50 States and the District of Columbia that capture case information on at least 95 percent of the expected number of reportable cancers*

Search Strategy: Neoplasm[majr] AND Registries/statistics and numerical data[MAJR] OR "population based registries" AND (humans[MeSH] AND English[la]) AND (united states[mh] OR usa[ad]) AND "last 5 years"[dp]

Reviewed by: *Annette Nahin*
Librarian
National Library of Medicine, MEDLARS Management Section

The medical librarian conducting this review also provided valuable insight by indicating that because PubMed processes search terms from left to right, the search strategy is pulling records that combine neoplasms with registries/sn and then it pulls in (ORs) anything with the phrase, *population based registries*. She further indicated that to limit retrieval to cancer-related articles, either re-order the terms, or use parentheses around the registry terms. She further indicated that for consistency, either use the search tags the way PubMed would (spelled out), or use the abbreviated tags in lowercase throughout.

OBJECTIVE C13: *Increase the proportion of cancer survivors who are living 5 years or longer after diagnosis*

Search Strategy: (Neoplasms[Mesh]) AND Disease-Free Survival[Mesh] AND SEER Program[MeSH] AND (humans[MeSH] AND English[la]) AND "last 10 years"[dp]

Reviewed by: *Kezzie Joseph, MHA*
Project Health Coordinator
United Way of Metropolitan Atlanta

Also Reviewed by: *Annette Nahin*
Librarian
National Library of Medicine, MEDLARS Management Section

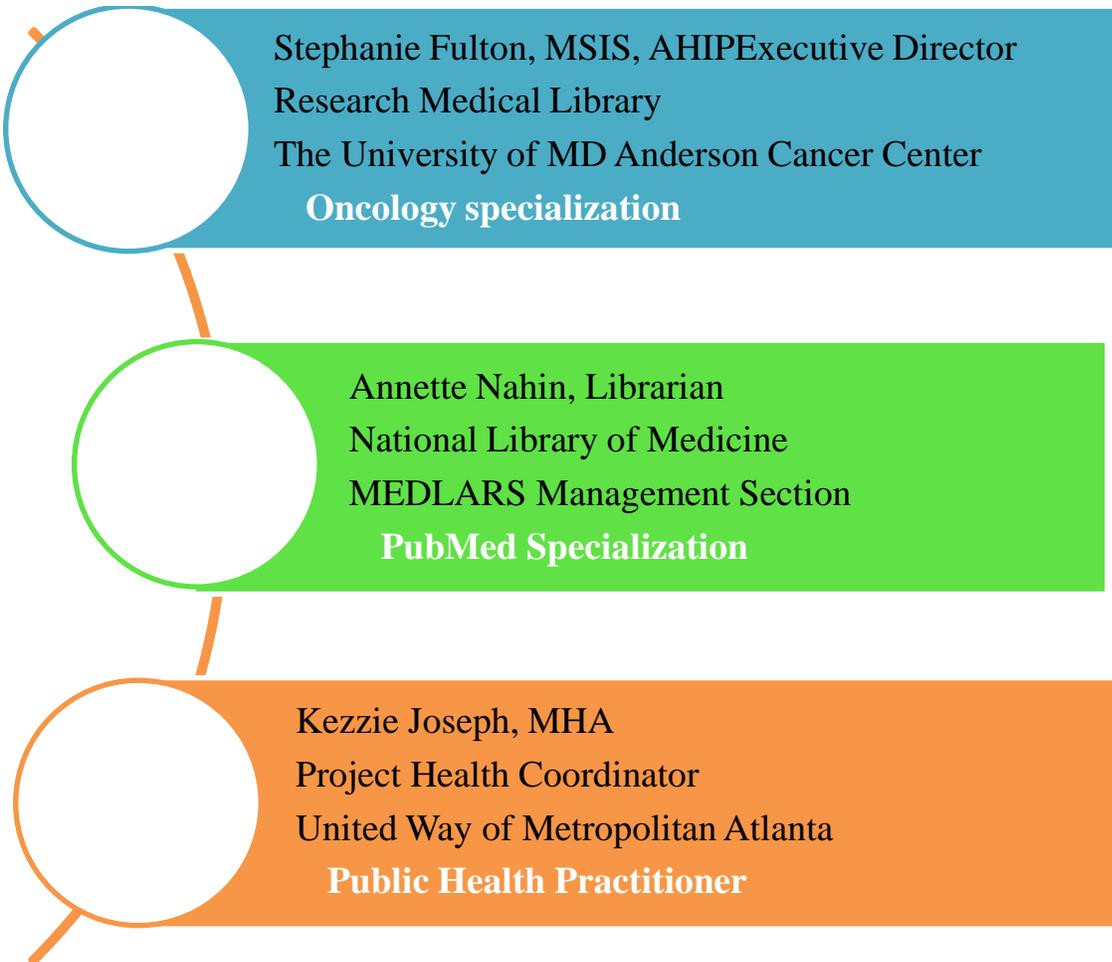
The public health practitioner indicated in her review that the “search result articles are not on target for public health planners. The search result articles are too specific and focus on a particular type and stage of cancer... additional information on health models used to encourage positive behavior change among cancer patients would help public health professionals in developing appropriate and targeted health messages and effectively working with clinicians”.

The medical librarian reviewing this search indicated that the search developed for Objective 13 “thought it better to use the broader MH, Survival Analysis...and limit to the last 3 years. Disease-Free Survival[Mesh] is too narrow. There is so much cancer literature, I think it’s safer to justify a date limit rather than missing something on target”.

It was helpful to see the contrast in the reviewers comments leading up to the same end result. Overall, the initial search conducted by the Associate for Objective C13 yielded more relevant results once both sets of feedback were incorporated. This valuable feedback on how the Associate may alter the search based on suggestions yielded results more along the lines of what the public health practitioner mentioned as being helpful for her profession.

Discussion

Figure 2: Reviewer Expertise



This project yielded the completion of eighteen out of twenty searches to be used by the public health professionals. For this Associate Fellow, having the opportunity to conduct searches and develop SEQs on behalf of the NLM; providing the public health workforce the ability to use PubMed search strategies in order to implement programs that help meet the national objectives of Healthy People 2020 far outweighed the possibility of not having the searches reviewed.

Obtaining feedback from those who served as unofficial reviewers provided the Associate with the benefit of an expert review in 3 separate areas (Figure 2) regarding the aspects and nuances of building searches to yield relevant search results. While the Associate had beginner searching skills, an important aspect of the learning process was realizing when and if to use a PubMed Tag, when to change, add or remove a term to yield more relevant results.

As it stands, this Associate has left a starting point for the person working with the ODPHP Reviewer to complete this assignment. As cancer remains a major health concern in the United States, the opportunity to contribute information access of literature that can assist public health practitioners to programs to health improve overall health in our country has been a rewarding project experience.

Recommendations

There are possible next steps that can occur to see this project to completion and to prepare for Healthy People 2030.

One option is to use the suggestions from the unofficial reviewers to refine to searches that may require such action. At the same time, the ODPHP reviewer may have feedback requiring additional refinement for the searches – in this case, revising searches ahead of ODPHP reviewer feedback may not be the best use of the time and talent of the librarian who will be continuing on with the cancer searches.

To prepare for Healthy People 2030, the organizers may wish to schedule an in person or remote meeting between NICHSR and ODPHP prior to the start of assigning librarians to develop 2030 SEQs. This could address the lessons learned from Healthy People 2010 and Healthy People 2020. This may include the discussion of perhaps assigning a main and an alternate reviewer for each topic assigned.

In this meeting, establish the procedure for a remote meeting with NICHSR, the assigned librarian and official reviewer for each topic area. This meeting will establish expectations and a time line for review completion.

Appendix A

2012 Spring Project Proposal

PROJECT TITLE: Development of PubMed searches for the Cancer subject area of Healthy People 2020 for the HP 2020 SEQs, on phpartners.org.

SUBMITTED BY: Lisa Sedlar, NICHSR

BRIEF DESCRIPTION: NLM is dedicated to improving access to information relevant to the needs of the public health workforce. The Partners in Information Access for the public Health Workforce (Partners) (<http://phpartners.org>) is one of the projects working on improving collaboration and information access among public health agencies and organizations. The Partners website is designed to provide timely and useful information resources to help the public health workforce improve the health of the people of the United States.

The National Information Center on Health Services Research and Health Care Technology (NICHSR), a component of the National Library of Medicine, has been working with other federal government agencies involved in public health to organize and develop important information resources for the public health workforce. This initiative is the focus of the Partners in Information Access for the Public Health Workforce (PIAPHW) (<http://phpartners.org>); also know at “Partners.”

In 2002, under the aegis of Partners, NLM developed a pilot web resource relating to the federal government’s Healthy People 2010 “prevention agenda for the nation” (<http://www.healthypeople.gov/>). NLM’s pilot web resource, entitled the Healthy People 2010 Information Access Project (HP2010 IAP), was very well received. Based on its success, the Healthy People 2010 Information Access Project was expanded to include all of the Health People 2010 Focus Areas. It was the most heavily used portion of the Partners website.

Healthy People 2020, builds upon, but is not restricted to the topic areas and specific objectives of Healthy People 2010. In comparison with Healthy People 2010, new subject areas have been added and changes have been made to the specific objectives within a subject area. NICHSR would like to again offer the public health workforce the ability to use PubMed search strategies for all of the new Healthy People 2020 topic areas. The emphasis of this resource is on quality, evidence-based information related to the Healthy People 2020 subject areas. See <http://phpartners.org/hp/> for background on this project.

Currently there are nineteen Healthy People 2020 topic areas on the Partners website.

Additional topic areas are in various stages of development and review. The one topic area that has not had a librarian assigned to develop PubMed search strategies is Cancer.

This project involves the development of PubMed search strategies for the Cancer topic area of Healthy People 2020.

DURATION: 3 Months

FULL-TIME EQUIVALENT: 11 weeks

EXTERNAL SCHEDULES / DEADLINES: None

PRIMARY LEARNING OBJECTIVES FOR ASSOCIATE:

- Ability to develop PubMed search strategies for the HP 2020 topic area with a public health focus
- Ability to work with a subject matter expert to refine PubMed searches
- Organize information in a meaningful way

EXPECTED PROJECT EXPERIENCES:

- Project scope definition

- Evaluation of Healthy People 2010 PubMed searches
- Development of PubMed search strategies for Healthy People 2020 objectives
- Refinement of PubMed search strategies with a subject matter expert

EXPECTED OUTPUTS/PRODUCTS:

- A work plan for completion of project
- PubMed search strategies for all of the objectives and sub-objectives, when appropriate, for the Cancer topic area of Healthy People 2020
- Finalized PubMed search strategies for all of the Objectives and sub-objectives, when appropriate, for the Cancer topic area of Healthy People 2020
-

NOTES: If time allows, the PubMed searches can be entered into the database for the Partners website.

SUGGESTED METHODOLOGIES:

Review the Healthy People 2010 IAP searches for Cancer on phpartners.org, available at: <http://phpartners.org/hp/cancer.html>

Review HP 2020 topics with PubMed searches already on phpartners.org.

NOTES:

- Completion of this project will depend on the availability of the subject matter expert. The subject matter expert was identified by the Office of Disease Prevention and Health Promotion (ODPHP) and their schedule may influence how many of the searches are able to be finalized.

BENEFITS TO NLM:

NLM will be able to better assist the public health workforce by offering additional PubMed searches for an additional Healthy People 2020 topic.

PROJECT LEADERS: Lisa Sedlar

Resource people at NLM: Ione Auston

Appendix B

PURPOSE of Project: To make evidence-based information, when available, about population-based strategies to achieve Healthy People 2020 objectives more easily accessible to public health professionals through the NLM PubMed database.

NLM-designated librarians will work with HP2020 Work Group Coordinators to develop and refine these strategies and to deliver them to NLM for posting to the HP2020 SEQ web site (<http://phpartners.org/hp2020/index.html>).

- a. Search strategy development is in iterative process. It may take several versions of a specific strategy to find the right balance of including as many relevant citations as possible while minimizing the number of irrelevant citations.
- b. The goal is to retrieve about 100-150 citations for each search strategy. Date limits (usually to latest 5 years) may need to be used in the search strategy to reduce the retrieval to this manageable number of citations.
- c. English language and occasionally United States will need to be added to the search strategy to reduce the retrieval and/or to restrict retrieval to citations of interest to U.S. Public Health practitioners.
- d. The strategies should reflect the Public Health perspective rather than the clinical effectiveness perspective. Program Evaluation and similar concepts may need to be used in the search strategy to capture this perspective.

e. Reviewer Questions:

e.1. Do most article subjects (based on title and abstract) seem on target for the needs of public health planners? If not, what general subjects seem irrelevant or are missing? Please keep in mind that no search is perfect.

Although we chose the best terms to retrieve articles on achieving the specific Healthy People objective, some articles will not be relevant. Also, in many areas, articles that document evidence based strategies to achieve the objective have been somewhat limited.

e.2. Does the search capture the most important published articles related to the objective? If not, can you provide titles and authors of crucial articles that are missing? We are not looking for articles that describe the extent of a given problem, but instead desire articles on effective strategies to achieve the objective. In response to reviewer feedback, the librarian will try to revise the search terms to pull in or exclude specific articles and subjects

Appendix C

Healthy People 2020 Summary of Objectives

Cancer

Number	Objective Short Title
C-1	Overall cancer deaths
C-2	Lung cancer deaths
C-3	Female breast cancer deaths
C-4	Uterine cervix cancer deaths
C-5	Colorectal cancer deaths
C-6	Oropharyngeal cancer deaths
C-7	Prostate cancer deaths
C-8	Melanoma deaths
C-9	Invasive colorectal cancer
C-10	Invasive uterine cervical cancer
C-11	Late-stage female breast cancer
C-12	Statewide cancer registries
C-13	Cancer survival
C-14	Mental and physical health-related quality of life of cancer survivors
C-15	Cervical cancer screening
C-16	Colorectal cancer screening
C-17	Breast cancer screening
C-18	Receipt of counseling about cancer screening
C-19	Prostate-specific antigen (PSA) test
C-20	Ultraviolet irradiation exposure

Topic Area: Cancer

C-1: Reduce the overall cancer death rate.

Target: 160.6 deaths per 100,000 population.

Baseline: 178.4 cancer deaths per 100,000 population occurred in 2007 (age adjusted to the year 2000 standard population).

Target setting method: 10 percent improvement.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

C-2: Reduce the lung cancer death rate.

Target: 45.5 deaths per 100,000 population.

Baseline: 50.6 lung cancer deaths per 100,000 population occurred in 2007 (age adjusted to the year 2000 standard population).

Target setting method: 10 percent improvement.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

C-3: Reduce the female breast cancer death rate.

Target: 20.6 deaths per 100,000 females.

Baseline: 22.9 female breast cancer deaths per 100,000 females occurred in 2007 (age adjusted to the year 2000 standard population).

Target setting method: 10 percent improvement.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

C-4: Reduce the death rate from cancer of the uterine cervix.

Target: 2.2 deaths per 100,000 females.

Baseline: 2.4 uterine cervix cancer deaths per 100,000 females occurred in 2007 (age adjusted to the year 2000 standard population).

Target setting method: 10 percent improvement.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

C-5: Reduce the colorectal cancer death rate.

Target: 14.5 deaths per 100,000 population.

Baseline: 17.0 colorectal cancer deaths per 100,000 population occurred in 2007 (age adjusted to the year 2000 standard population).

Target setting method: Modeling/projection.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

C-6: Reduce the oropharyngeal cancer death rate.

Target: 2.3 deaths per 100,000 population.

Baseline: 2.5 oropharyngeal cancer deaths per 100,000 population occurred in 2007 (age adjusted to the year 2000 standard population).

Target setting method: 10 percent improvement.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

C-7: Reduce the prostate cancer death rate.

Target: 21.2 deaths per 100,000 males.

Baseline: 23.5 prostate cancer deaths per 100,000 males occurred in 2007 (age adjusted to the year 2000 standard population).

Target setting method: 10 percent improvement.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

C-8: Reduce the melanoma cancer death rate.

Target: 2.4 deaths per 100,000 population.

Baseline: 2.7 melanoma cancer deaths per 100,000 population occurred in 2007 (age adjusted to the year 2000 standard population).

Target setting method: 10 percent improvement.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

C-9: Reduce invasive colorectal cancer.

Target: 38.6 new cases per 100,000 population.

Baseline: 45.4 new cases of invasive colorectal cancer per 100,000 population were reported in 2007 (age adjusted to the year 2000 standard population).

Target setting method: Modeling/projection.

Data sources: National Program of Cancer Registries (NPCR), CDC; Surveillance, Epidemiology and End Results (SEER) Program, NIH, NCI.

C-10: Reduce invasive uterine cervical cancer.

Target: 7.1 new cases per 100,000 females.

Baseline: 7.9 new cases of invasive uterine cancer per 100,000 females were reported in 2007 (age adjusted to the year 2000 standard population).

Target setting method: 10 percent improvement.

Data sources: National Program of Cancer Registries (NPCR), CDC; Surveillance, Epidemiology and End Results (SEER) Program, NIH, NCI.

C-11: Reduce late-stage female breast cancer.

Target: 41.0 new cases per 100,000 females.

Baseline: 43.2 new cases of late-stage breast cancer per 100,000 females were reported in 2007 (age adjusted to the year 2000 standard population).

Target setting method: Modeling/projection.

Data sources: National Program of Cancer Registries (NPCR), CDC; Surveillance, Epidemiology and End Results (SEER) Program, NIH, NCI.

C-12: Increase the number of central, population-based registries from the 50 States and the District of Columbia that capture case information on at least 95 percent of the expected number of reportable cancers.

Target: 51 (50 States and the District of Columbia).

Baseline: 42 States had central, population-based registries that captured case information on at least 95 percent of the expected number of reportable cancers in 2006.

Target setting method: Total coverage.

Data sources: National Program of Cancer Registries (NPCR), CDC; Surveillance, Epidemiology and End Results (SEER) Program, NIH, NCI.

C-13: Increase the proportion of cancer survivors who are living 5 years or longer after diagnosis.

Target: 72.8 percent.

Baseline: 66.2 percent of persons with cancer were living 5 years or longer after diagnosis in 2007.

Target setting method: 10 percent improvement.

Data source: Surveillance Epidemiology and End Results (SEER) Program, NIH, NCI.

C-14: (Developmental) Increase the mental and physical health-related quality of life of cancer survivors.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

C-15: Increase the proportion of women who receive a cervical cancer screening based on the most recent guidelines.

Target: 93.0 percent.

Baseline: 84.5 percent of women aged 21 to 65 years received a cervical cancer screening based on the most recent guidelines in 2008 (age adjusted to the year 2000 standard population).

Target setting method: 10 percent improvement.

Data Source: National Health Interview Survey (NHIS), CDC, NCHS.

C-16: Increase the proportion of adults who receive a colorectal cancer screening based on the most recent guidelines.

Target: 70.5 percent.

Baseline: 54.2 percent of adults aged 50 to 75 years received a colorectal cancer screening based on the most recent guidelines in 2008 (age adjusted to the year 2000 standard population).

Target setting method: Modeling/projection.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

C-17: Increase the proportion of women who receive a breast cancer screening based on the most recent guidelines.

Target: 81.1 percent.

Baseline: 73.7 percent of females aged 50 to 74 years received a breast cancer screening based on the most recent guidelines in 2008 (age adjusted to the year 2000 standard population).

Target setting method: 10 percent improvement.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

C-18: Increase the proportion of adults who were counseled about cancer screening consistent with current guidelines.

C-18.1 Increase the proportion of women who were counseled by their providers about mammograms.

Target: 76.8 percent.

Baseline: 69.8 percent of women aged 50 to 74 years were counseled by their providers about mammograms in 2008 (age adjusted to the year 2000 standard population).

Target setting method: 10 percent improvement.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

C–18.2 Increase the proportion of women who were counseled by their providers about Pap tests.

Target: 65.8 percent.

Baseline: 59.8 percent of women aged 21 to 65 years were counseled by their providers about Pap tests in 2008 (age adjusted to the year 2000 standard population).

Target setting method: 10 percent improvement.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

C–18.3 (Developmental) Increase the proportion of adults who were counseled by their providers about colorectal cancer screening.

Potential data source: National Health Interview Survey (NHIS), NCHS, CDC.

C–19: (Developmental) Increase the proportion of men who have discussed with their health care provider whether or not to have a prostate-specific antigen (PSA) test to screen for prostate cancer.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

C–20: Increase the proportion of persons who participate in behaviors that reduce their exposure to harmful ultraviolet (UV) irradiation and avoid sunburn.

C–20.1 (Developmental) Reduce the proportion of adolescents in grades 9 through 12 who report sunburn.

Potential data source: Youth Risk Behavior Surveillance Survey (YRBSS), CDC.

C–6

C–20.2 (Developmental) Reduce the proportion of adults aged 18 years and older who report sunburn.

Potential data source: National Health Interview Survey (NHIS), NCHS, CDC.

C–20.3 Reduce the proportion of adolescents in grades 9 through 12 who report using artificial sources of ultraviolet light for tanning.

Target: 14.0 percent.

Baseline: 15.6 percent of adolescents in grades 9 through 12 reported using artificial sources of ultraviolet light for tanning in 2009.

Target setting method: 10 percent improvement.

Data source: Youth Risk Behavior Surveillance Survey (YRBSS), CDC.

C–20.4 Reduce the proportion of adults aged 18 and older who report using artificial sources of ultraviolet light for tanning.

Target: 13.7 percent.

Baseline: 15.2 percent of adults aged 18 and older reported using artificial sources of ultraviolet light for tanning in 2008 (age adjusted to the year 2000 standard population).

Target setting method: 10 percent improvement.

Data source: National Health Interview Survey (NHIS), NCHS, CDC.

C–20.5 Increase the proportion of adolescents in grades 9 through 12 who follow protective measures that may reduce the risk of skin cancer.

Target: 11.2 percent.

Baseline: 9.3 percent of adolescents in grades 9 through 12 followed protective measures that may reduce the risk of skin cancer in 2009.

Target setting method: 20 percent improvement.

Data source: Youth Risk Behavior Surveillance Survey (YRBSS), CDC.

C–20.6 Increase the proportion of adults aged 18 years and older who follow protective measures that may reduce the risk of skin cancer.

Target: 80.1 percent.

Baseline: 72.8 percent of adults aged 18 years and older followed protective measures that may reduce the risk of skin cancer in 2008 (age adjusted to the year 2000 standard population).

Target setting method: 10 percent improvement.

1

¹ Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Healthy People 2020, Cancer

Searches developed by Michele Mason-Coles

C-1 Reduce the overall cancer death rate

[C 1](#)

Search Strategy:

Neoplasms/mo[major:noexp] AND (pc[sh] OR primary prevention[mh] OR SEER program[mh] OR tertiary prevention[mh] OR secondary prevention[mh] OR life style[mh] OR prevention[tiab] OR reduction[tiab] OR community health services[mh] OR health education[mh] OR risk reduction behavior[mh] OR health promotion[mh] OR health policy[mh] OR patient education as topic[mh] OR program evaluation[mh] OR public health[majr:noexp] OR Health services research[mh] OR public health agency OR public health practice[mh] OR program*[tiab] OR "community-based") AND (humans[mesh] AND English[la]) AND (united states[mh] OR usa[ad]) AND "last 5 years"[dp]

C-2 Reduce the lung cancer death rate

[C-2](#)

Search Strategy:

Lung Neoplasms[majr:noexp] AND mo[sh] AND (pc[sh] OR SEER program[mh] OR Public Health Agency OR Primary Prevention[mh] OR tertiary Prevention[mh] OR Secondary Prevention[mh] OR Life style[mh] OR prevention[tiab] OR reduction[tiab] OR Community health services[mh] OR Health Education[mh] OR Risk Reduction Behavior[mh] OR health promotion[mh] OR health policy[mh] OR Patient education as topic[mh] OR program evaluation[mh] OR public health[majr:noexp] OR Health services Research[mh] OR public health practice[mh] OR program*[tiab] OR "community-based") AND (humans[MeSH] AND English[la]) AND (united states[mh] OR usa[ad]) AND "last 5 years"[dp]

C-3 Reduce the female breast cancer death rate

[C-3](#)

Search Strategy:

Breast Neoplasms[majr:noexp] AND mo[sh] AND (women[mh] OR female[mh]) AND (pc[sh] OR Primary Prevention[mh] OR tertiary Prevention[mh] OR Secondary Prevention[mh] OR Life

style[mh] OR prevention[tiab] OR reduction[tiab] OR Community health services[mh] OR Health Education[mh] OR Risk Reduction Behavior[mh] OR health promotion[mh] OR health policy[mh] OR SEER Program[mh] OR Patient education as topic[mh] OR program evaluation[mh] OR public health[majr:noexp] OR Health services Research[mh] OR public health practice[mh] OR program*[tiab] OR "community-based") AND (humans[MeSH] AND English[la]) AND (united states[mh] OR usa[ad]) AND "last 5 years"[dp]

C-4 Reduce the death rate from cancer of the uterine cervix

[C-4](#)

Search Strategy:

Uterine Cervical Neoplasms[majr:noexp] AND mo[sh] AND (pc[sh] OR Primary Prevention[mh] OR tertiary Prevention[mh] OR Secondary Prevention[mh] OR Life style[mh] OR prevention[tiab] OR reduction[tiab] OR Community health services[mh] OR Health Education[mh] OR Risk Reduction Behavior[mh] OR SEER Program[MH] OR health promotion[mh] OR health policy[mh] OR Patient education as topic[mh] OR program evaluation[mh] OR public health[majr:noexp] OR Health services Research[mh] OR public health practice[mh] OR program*[tiab] OR "community-based") AND (humans[MeSH] AND English[la]) AND (united states[mh] OR usa[ad])

C-5 Reduce the colorectal cancer death rate

[C-5](#)

Search Strategy:

Colorectal neoplasms[majr:noexp] AND mo[sh] AND (pc[sh] OR Primary Prevention[mh] OR tertiary Prevention[mh] OR Secondary Prevention[mh] OR SEER program[mh] OR Life style[mh] OR prevention[tiab] OR reduction[tiab] OR Community health services[mh] OR Health Education[mh] OR Risk Reduction Behavior[mh] OR health promotion[mh] OR health policy[mh] OR Patient education as topic[mh] OR program evaluation[mh] OR public health[majr:noexp] OR Health services Research[mh] OR public health practice[mh] OR program*[tiab] OR "community-based") AND (humans[MeSH] AND English[la]) AND (united states[mh] OR usa[ad]) AND "last 10 years"[dp]

C-6 Reduce the oropharyngeal cancer death rate

[C-6](#)

Search Strategy:

(Oropharyngeal neoplasms[majr:noexp] OR oropharynx neoplasms) AND mo[sh] AND (pc[sh] OR Primary Prevention[mh] OR tertiary Prevention[mh] OR Secondary Prevention[mh] OR Life

style[mh] OR SEER program[mh] OR prevention[tiab] OR reduction[tiab] OR Community health services[mh] OR Health Education[mh] OR Risk Reduction Behavior[mh] OR health promotion[mh] OR health policy[mh] OR Patient education as topic[mh] OR program evaluation[mh] OR public health[majr:noexp] OR Health services Research[mh] OR public health practice[mh] OR program*[tiab] OR "community-based") AND (humans[MeSH] AND English[la])

C-7 Reduce the prostate cancer death rate

[C-7](#)

Search Strategy:

Prostate neoplasms[majr:noexp] AND mo[sh] AND (pc[sh] OR Primary Prevention[mh] OR tertiary Prevention[mh] OR Secondary Prevention[mh] OR Life style[mh] OR SEER program[MH] OR prevention[tiab] OR reduction[tiab] OR Community health services[mh] OR Health Education[mh] OR Risk Reduction Behavior[mh] OR health promotion[mh] OR health policy[mh] OR Patient education as topic[mh] OR program evaluation[mh] OR public health[majr:noexp] OR Health services Research[mh] OR public health practice[mh] OR program*[tiab] OR "community-based") AND (humans[MeSH] AND English[la]) AND (united states[mh] OR usa[ad]) AND "last 5 years"[dp]

C-8 Reduce the melanoma cancer death rate

[C-8](#)

Search Strategy:

Melanoma[majr] AND mo[sh] AND (pc[sh] OR Primary Prevention[mh] OR tertiary Prevention[mh] OR Secondary Prevention[mh] OR SEER program[MH] OR Life style[mh] OR prevention[tiab] OR reduction[tiab] OR early detection of cancer[mh] OR Community health services[mh] OR Health Education[mh] OR Risk Reduction Behavior[mh] OR health promotion[mh] OR health policy[mh] OR Patient education as topic[mh] OR program evaluation[mh] OR public health[majr:noexp] OR Health services Research[mh] OR public health practice[mh] OR program*[tiab] OR "community-based" OR ultraviolet rays[mh] OR sunbathing[mh]) AND (humans[MeSH] AND English[lang]) AND (united states[mh] OR usa[ad]) AND "last 10 years"[dp]

C-9 Reduce invasive colorectal cancer

[C-9](#)

Search Strategy:

Colorectal neoplasms[majr] AND ("invasive cancer" OR "invasive neoplasms" OR "infiltrating neoplasms") AND (pc[sh] OR Primary Prevention[mh] OR tertiary Prevention[mh] OR Secondary Prevention[mh] OR Life style[mh] OR prevention[tiab] OR reduction[tiab] OR Community health services[mh] OR Health Education[mh] OR Risk Reduction Behavior[mh] OR health promotion[mh] OR diet[mh] OR prevention and control[sh] OR health policy[mh] OR Patient education as topic[mh] OR program evaluation[mh] OR public health[majr:noexp] OR (Incidence[mh] OR Prevalence[mh]) OR Health services Research[mh] OR public health practice[mh] OR program*[tiab] OR "community-based") AND (humans[MeSH] AND English[la]) AND (united states[mh] OR usa[ad])

C-10 Reduce invasive uterine cervical cancer

[C-10](#)

Search Strategy:

Uterine cervical neoplasms[majr] AND ("invasive cancer" OR "invasive neoplasms" OR "infiltrating neoplasms") AND (pc[sh] OR Primary Prevention[mh] OR tertiary Prevention[mh] OR Secondary Prevention[mh] OR Life style[mh] OR prevention[tiab] OR reduction[tiab] OR SEER Program[mh] OR public health practice[mh] OR vaginal smears[mh] OR Community health services[mh] OR Health Education[mh] OR Risk Reduction Behavior[mh] OR health services accessibility[majr] OR health promotion[mh] OR diet[mh] OR prevention and control[sh] OR health policy[mh] OR Patient education as topic[mh] OR program evaluation[mh] OR public health[majr:noexp] OR Health services Research[mh] OR public health practice[mh] OR program*[tiab] OR "community-based") AND (humans[MeSH] AND English[la]) AND (united states[mh] OR usa[ad])

C-11 Reduce late-stage female breast cancer

[C-11](#)

Search Strategy:

Breast Neoplasms[majr:noexp] AND (women[mh] OR female[mh]) AND (advanced OR "late stage" OR "stage III" OR "stage IV" OR metastatic) AND (reduce*[tiab] OR risk reduction behavior[mh]) AND (pc[sh] OR Primary Prevention[mh] OR tertiary Prevention[mh] OR Secondary Prevention[mh] OR Life style[mh] OR prevention[tiab] OR Community health services[mh] OR Health Education[mh] OR health promotion[mh] OR health policy[mh] OR SEER Program[mh] OR Patient education as topic[mh] OR program evaluation[mh] OR public health[majr:noexp] OR Health services Research[mh] OR public health practice[mh] OR program*[tiab] OR "community-based") AND (humans[MeSH] AND English[la]) AND (united states[mh] OR usa[ad])

C-12 Increase the number of central, population-based registries from the 50 States and the District of Columbia

that capture case information on at least 95 percent of the expected number of reportable cancers

[C-12](#)

Search Strategy:

Neoplasm[majr] AND Registries/statistics and numerical data[MAJR] OR "population based registries" AND (humans[MeSH] AND English[la]) AND (united states[mh] OR usa[ad]) AND "last 5 years"[dp]

C-13 Increase the proportion of cancer survivors who are living 5 years or longer after diagnosis

[C-13](#)

Search Strategy:

(Neoplasms[Mesh]) AND Disease-Free Survival[Mesh] AND SEER Program[MeSH] AND (humans[MeSH] AND English[la]) AND "last 10 years"[dp]

C-14 (Developmental) Increase the mental and physical health-related quality of life of cancer survivors

[C-14](#)

Search Strategy:

((((Neoplasms/epidemiology[Mesh] OR Neoplasms/psychology[Mesh]))) AND Quality of life/psychology[Mesh] AND humans[Mesh] AND English[la] AND public health[majr] AND (united states[Mesh] OR usa[affiliation]))

C-15 Increase the proportion of women who receive a cervical cancer screening based on the most recent guidelines

[C-15](#)

Search Strategy:

((uterine neoplasms/epidemiology[Mesh] OR uterine neoplasms/pc[Mesh])) AND early detection of cancer[Mesh] AND humans[Mesh] AND English[la] AND public health[majr] AND "last 5 years"[dp]

C-16 Increase the proportion of adults who receive a colorectal cancer screening based on the most recent guidelines

[C-16](#)

Search Strategy:

(colorectal neoplasms/epidemiology[Mesh] OR colorectal neoplasms/pc[Mesh]) AND early detection of cancer[Mesh] AND humans[Mesh] AND english[la] AND (united states[Mesh] OR usa[affiliation]) AND public health[majr] AND "last 5 years"[dp]

C-17 Increase the proportion of women who receive a breast cancer screening based on the most recent guidelines

[C-17](#)

Search Strategy:

((breast neoplasms/epidemiology[Mesh] OR breast neoplasms/pc[mesh])) AND early detection of cancer[mesh] AND humans[mesh] AND english[la] AND (united states[mesh] OR usa[affiliation]) AND public health[majr] AND "last 5 years"[dp]

C-18 Increase the proportion of adults who were counseled about cancer screening consistent with current guidelines

C-18.1 Increase the proportion of women who were counseled by their providers about mammograms

[C-18.1](#)

Search Strategy:

((Breast neoplasms/epidemiology[mesh] OR breast neoplasms/pc[mesh])) AND ((counseling[mesh] OR counseling[tiab]) AND mammography[mesh]) AND public health[mesh] AND english[la]

C-18.2 Increase the proportion of women who were counseled by their providers about Pap tests

[C-18.2](#)

Search Strategy:

((uterine cervical neoplasms/epidemiology[mesh] OR uterine cervical neoplasms/pc[mesh])) AND (counseling[mesh] OR counseling[tiab]) AND english[la]

C-18.3 (Developmental) Increase the proportion of adults who were counseled by their providers about colorectal cancer screening

[C-18.3](#)

Search Strategy:

(colorectal neoplasms/epidemiology[mesh] OR colorectal neoplasms/pc[mesh]) AND (counseling[mesh] OR counseling[tiab]) AND public health[majr] AND english[la]

C-19 (Developmental) Increase the proportion of men who have discussed with their health care provider whether or not to have a prostate-specific antigen (PSA) test to screen for prostate cancer

C-20 Increase the proportion of persons who participate in behaviors that reduce their exposure to harmful ultraviolet (UV) irradiation and avoid sunburn

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