

Script for NIOSH Web Module: "Collection of Industry and Occupation (I & O) Data for Cancer Registry Professionals"

Welcome to the online training module "Collection of Industry and Occupation (I & O) Data for Cancer Registry Professionals."

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The goal of this training module is to improve both the quality and the quantity of occupational information captured from hospital and clinic records in order to increase the value of using this information for public health surveillance and research with the ultimate goal of decreasing the incidence of cancers related to occupational exposures.

This module contains 3 parts:

1. Background on the importance of collecting information on the usual (or longest-held) industry and occupation of cancer patients,
2. Guidelines for collecting industry and occupation (or I & O), and
3. Examples of adequate and inadequate I & O entries.

Throughout this training module, you will hear and see the terms "adequate" and "inadequate" applied to examples of I & O entries. We understand that registrars are often limited by the amount and specificity of information recorded in the patient's medical record, but we want to help you do the best you can with what you have to work with. Entries like the examples described as "adequate" are always preferred to entries like those described as "inadequate," but "inadequate" entries are acceptable when no other information is available. In this module we use the term inadequate to describe an entry that does not provide enough information for accurate coding of an industry or occupation according to standard classification systems.

Section 1:

Background on the importance of collecting information on the usual (or longest-held) industry and occupation of cancer patients

Here are some facts about cancer and occupation. As you are probably well aware, cancer is the leading cause of death for those under age 85. You may also know that multiple factors contribute to cancer, and there may be interactions between hereditary, lifestyle, and environmental factors. But, did you know that somewhere between 4% and 20% of cancer cases may be related to occupational exposures to carcinogens?

Some examples of established links between occupational exposures and cancer include:

- Lung cancer among firefighters related to exposure to products of incomplete combustion.
- Lung, nasal, and nasopharyngeal cancer among carpenters and cabinet makers related

to exposure to wood dust.

- Leukemia among healthcare workers related to exposure to ethylene oxide, used to sterilize equipment.
- and Lung cancer among sandblasters and brick-makers related to exposure to silica.

Examples of other possible links between occupational exposures and cancer that require further study include:

- Leukemia and cancer of the brain, central nervous system, breast, and other sites among pesticide applicators related to exposure to various pesticides.
- and Leukemia and cancer of the brain, central nervous system, bladder, and other sites among hair dressers related to exposure to hair dyes.

In order for researchers to perform the necessary studies to confirm or exclude these possible links between occupational exposures and cancer, both the quality and the quantity of occupational information available for cancer cases need to be improved.

This flow chart illustrates the key steps for including industry & occupation information in cancer registries that can be used for these types of studies:

- First, the patient's work history must be recorded in a medical chart or death certificate.
This information may be found in administrative forms (such as an admission face sheet), clinical notes, or a death certificate.
- Second, the patient's usual industry and occupation must be abstracted from these records in text form.
There are 2 fields to abstract: industry, which is a kind of business, and occupation, which is a type of job or work. We'll discuss these definitions later on.
- Finally, text responses for industry and occupation (or I & O) must be assigned standard codes for analysis.
NIOSH often uses the Census I & O coding system. In the 2002 version, this included 270 possible numerical codes for industry and 509 possible numerical codes for occupation.

Now let's look at the people involved in these steps for including useful industry & occupation information in cancer registries:

- Step 1 depends on clerks, health information management professionals, physicians, nurses, and/or funeral directors to record I & O information.
- Step 3 depends on central registries, NIOSH, and/or other researchers to code the I&O information.
- But step 2, the focus of this training module, depends on you, the cancer registrar, to abstract I & O information.

There is a legal basis for the collection of I & O information by cancer registrars. Public Law 102-515 (the Cancer Registries Amendment Act) requires the collection of: "information on the industry or occupation history of the individuals with the cancers, to the extent such information is available from the same record."

And there are many purposes for collecting I&O information, including:

- To estimate cancer burden by industry and occupation,
- To identify industries and occupations at high risk for cancer,
- To generate hypotheses about occupational risk factors for further research,
- To guide etiologic and intervention research and practices,
- To serve as additional measures of socioeconomic status, and
- To help identify industrial groups or worksite-related groups in which cancer screening or prevention activities may be beneficial.

So, now you understand why it's important to collect I & O information on cancer cases, but you may be thinking about how hard it is to find this information.

Respondents to a 2001 survey conducted by the North American Association of Central Cancer Registries (NAACCR) cited several barriers to the accuracy, completeness and usefulness of I & O information abstracted from medical records, including the following:

1. Collection and coding of I&O information from medical records is labor intensive;
2. I & O information in medical records is inconsistent, incomplete, and not in a standard format; and
3. Hospitals do not have a standard protocol for the collection of I&O information.

We hope that this training will help to address some of these barriers at the registrar level, by helping you to efficiently identify and record the most accurate, relevant information from the medical record.

But, given the barriers, you may ask:
Can I&O information collection by cancer registrars be improved?

YES, and here is the evidence...
Exhibit A- Massachusetts Study:

The Massachusetts Cancer Registry performed a study comparing I & O information collected by cancer registrars during routine record review with information collected after a detailed and dedicated medical record review. Prior to any intervention, the proportion of records with useful information for both industry and occupation was 27.8%, and the proportion of records with any useful I & O information abstracted was 63.6%.

After a detailed and dedicated medical record review, the proportion of records with useful information for both industry and occupation increased from 27.8% to 42.5%, and the proportion of records with any useful I & O information abstracted increased from 63.6% to 72.9%. Despite the limitations of industry and occupation information in medical records, this study showed that in Massachusetts abstraction of I&O information could be improved.

Unfortunately, the kind of detailed record review done in this study is more labor-intensive than routine record review, but...

Exhibit B- New Hampshire Study:

A similar study was performed in New Hampshire, and the New Hampshire study compared

3 scenarios: routine record review, detailed record review, and routine record review after a special 1-hour training session on collecting I & O information. Prior to any intervention, the proportion of records with useful information for both industry and occupation in New Hampshire was 15.2%, and the proportion of records with any useful I & O information abstracted was only 22.8%. After a detailed and dedicated medical record review, the proportion of records with useful information for both industry and occupation increased from 15.2% to 54.2%, and the proportion of records with any useful I & O information abstracted increased from 22.8% to 88.2%.

The I & O capture rate after detailed and dedicated record review was similar in the Massachusetts and New Hampshire studies, and was very high. But again, detailed record review is too labor-intensive to implement on a large scale. However...

...the New Hampshire investigators were able to show that a 1-hour training session on collecting I & O led to almost as much improvement in I & O information collection as a detailed record review did- with a lot less effort, just by improving routine record review procedures!

We hope that this online training module will lead to similar improvement in the information you collect.

So now that you've seen that I & O information collection by cancer registrars can be improved, let's review Guidelines for Collecting I & O.

As hospital cancer registrars, what you are collecting from the patient's record and entering into the patient's abstract is text information.

You are responsible for entering text that trained coding professionals in central registries can use to assign codes. In this section you learn what should be entered into the text fields.

The Usual Occupation is assigned NAACCR data item number 320. The Usual Industry is assigned NAACCR data item number 310. Note that the usual I & O is the same as the longest-held I & O, or the job at which the patient worked the longest. In your software these are probably labeled simply as 'occupation' and 'industry'. These fields are limited to 100 characters.

In the Occupation text field you should enter the type of job the patient was engaged in for most of his or her working life. In Industry you should enter the type of business or industry where the patient worked in his or her usual occupation.

Here is an example: "Registered nurse" would be a usual occupation and "Hospital" would be its corresponding usual industry.

Before we get into specific instructions, here are some general tips for abstracting

I & O:

Be sure to always match the Occupation to the recorded Industry (and vice-versa). Facility registrars are encouraged to update the abstract if new documentation in the patient's record provides information that is more likely to represent the usual I & O.

Where is industry and occupation information found in the medical record?

The first place most people look is the face sheet. Remember, the information here usually reflects the patient's current job, which may not be the same as his or her usual job.

You may be able to find usual occupation and industry information in other parts of the medical record. Information about occupation and industry may be documented in reports dictated by the physician including the history & physical, consult, and discharge summary. Another source for industry and occupation information is the nurse's admitting notes.

You may be able to determine the usual industry and occupation by reviewing previous medical records, not just the current admission. Also, look beyond the face sheet for industry and occupation information. Looking beyond the face sheet for occupation and industry information does take more time, but it often yields more information.

Here we have some examples.

If you have someone who is a welder working for a company that fabricates steel structures in a factory or shop, occupation would be welder and steel fabrication would be the industry. This is opposed to a welder involved in construction or erecting the steel structure on site.

Or, say you have an electrician working for the power company. "Electrician" is the occupation, and "power company" is the industry. If you had an electrician working in a hospital, you would put hospital as usual industry.

If you had a bookkeeper working for a drug company, code as "wholesale drugs" if it is a wholesale drug company, "drug manufacturing" if they work where they make the drugs or "retail drugs" if they work at a retail drug store.

Remember the usual industry should reflect type of activity conducted at the patient's place of work.

Please note that you are supposed to record Usual I & O, not Current I & O.

Although many patients will have held more than 1 job prior to cancer diagnosis; ideally, the job held the longest (Usual I & O) will be the one recorded for the registry. Usual I & O is preferred because it is most likely to lead to exposures of long enough duration and latency to contribute to cancer.

For example, let's say that the patient worked for 20 years as a coal miner, and has worked for the last year as a Home Depot sales associate.

His Usual I & O would be: Industry=coal mine; Occupation=coal miner.

His Current I & O: Industry=home improvement center; occupation=sales associate.

Don't record the Current I & O!

Record the usual I & O!

Now here is another example that emphasizes that you should never mix current and usual I&O information. The only time you should record a current I & O is when NO information is available on the usual I & O.

The next 4 scenarios all describe the same patient, but in each scenario different information is available in his chart.

This patient retired after 30 years as an engineer working for ACME chemical manufacturing, and now works as a Walmart greeter. (but it's likely that not all of this information is actually available in the medical record)

Scenario #1 is the ideal scenario. All of the information for both the patient's current I & O and his usual I & O is available in the chart. The current I & O is listed on the face sheet and the usual I & O is contained within the physician admission notes. In this scenario, it should be clear that the usual I & O (as recorded in the physician admission notes) is what you should abstract.

Scenario #2 is a little trickier. Information about the usual industry (ACME chemical manufacturing) is available (in the physician admission note) but there is no information about the usual occupation. Because there is information about current occupation (in the face sheet) though, you may be tempted to record "greeter" as the usual occupation. But this would not correspond to the usual industry, so you should record "unknown" in the occupation field.

In Scenario #3, information about usual occupation is available but there is no information about usual industry. There is information about both current industry and occupation (Walmart greeter) though, so you may be tempted to record the current I & O. But it would be better to record the usual occupation (engineer) and record "unknown" in the industry field.

Finally, we come to Scenario #4. No information about usual industry or occupation is available but there is information about current industry & occupation (Walmart greeter). Even if you doubt that the patient's usual I & O (or longest-held job) was as a Walmart greeter, in this case, you should record this information in the I & O fields because no other information is available.

Although documentation that a recorded I & O was actually the longest-held I & O is seldom available, we can usually have some confidence that current employment information (often what is found on medical record Face Sheets) can serve as a reasonable surrogate for longest-held job.

Analyses of a large representative sample of US workers found moderate-to-high levels

of agreement between current/most recent occupation and longest-held job.

Now, we'll go through more detailed instructions for how to abstract industry and occupation, starting with industry.

The abstracting instructions for the data item, Text-Usual Industry, are documented in NAACCR's Standards for Cancer Registries, Volume II: Data Standards and Data Dictionary.

Record the primary activity carried on by the business/industry at the location where the patient was employed for the most number of years before diagnosis of this tumor.

If the primary activity carried on at the location where the patient worked is unknown, it may be sufficient to record the name of the company (with city or town) in which the patient performed his/her usual industry. In these situations, if resources permit, a central or regional registry may be able to use the employer name and city/town to determine the type of activity conducted at that location.

An example of an ideal, or "adequate", industry entry is "Furniture store"; while an example of a less ideal (but acceptable) industry entry is "Big Al's store, Los Angeles, CA"

In order to give a clear and exact description of the industry, the entry must indicate both a general and specific function for the employer. The entry should include the type of product, service or good provided or produced by the place of employment.

Another example of an adequate industry entry is "Retail furniture store", while just "store" would be an inadequate industry entry.

Follow these 2 steps when recording industry:
First determine the general kind of business or industry. These are some main categories: Manufacturing, Sales (Wholesale or Retail), Agriculture, Construction, Mining, and Services.

Then describe the most specific function of the business/industry.

Be sure to distinguish among "manufacturing," "wholesale," "retail," and "service" components of an industry that performs more than one of these activities.

- The manufacturing sector produces goods usually by means of industrial operations. Even though a manufacturing company may sell its products in large quantities to other manufacturers, wholesalers, or retailers, it should not be reported as a wholesale company
- The wholesale sector buys, rather than makes, products in large quantities for resale to other retailers.
- The retail sector sells primarily to individual users.
- The services sector provides services to individuals and organizations.

Examples of service establishments include hotels, laundries, cleaning shops, advertising agencies, and automobile

- repair shops.
- The agricultural sector includes farms, ranches, dairies, greenhouses, nurseries, orchards, or hatcheries.
- The mining sector extracts naturally occurring mineral solids, such as coal and ores; liquid minerals, such as crude petroleum; and gases, such as natural gas.
- The construction sector engages primarily in the construction of buildings or engineering projects (e.g., highways and utility systems).

For example, General Electric (GE) has many different components. One patient who works for GE might make transformers, while another patient works for GE manufacturing jet engines. There is also a GE healthcare division. Even though all of these patients work for GE, the industry recorded should be different.

“Automobiles” is an example of an inadequate industry. Examples of adequate industries include: “Automobile manufacturing”, “Automobile wholesaler”, “Automobile retailer”, and “Automobile repair shop”.

These are some tips to keep in mind when the usual industry is a government agency. Be specific.

First, record the government level, such as Federal, state, county, or city. Second, use the full name of the division or agency. For example: “City of Cincinnati Health Department.” or “U.S. Census Bureau.”

Finally, if the agency is responsible for several different activities, report the specific activity in which the patient was engaged (if available), as in “State Health department immunization clinic” or “State Health department sanitation services”.

Now, we move on to instructions for abstracting occupation.

First, be specific: General or vague terms are not satisfactory since they don't always provide enough information to code. Keep in mind that the NAACCR text field allows for 100 characters. “Laborer” would be inadequate, whereas “residential bricklayer” would be adequate.

Second, be descriptive: Enter the word or words which most clearly describe the kind of work or type of duties performed by the patient. For example, rather than just recording “engineer”, try to determine if the patient was a “civil engineer” or a “chemical engineer”, etc.

Third, be complete: Occupation entries that give only the department or a place of work are unsatisfactory. Inadequate occupation examples include “worked in a warehouse” or “worked in a shipping department.” An adequate occupation entry would be “warehouse forklift operator.”

Now let's discuss some special cases with regards to usual industry and occupation

(or I & O).

First, how should you deal with these fields when the patient is a child? From NIOSH's perspective, if the patient is under 14 years of age, you should record "infant" or "child" in both the occupation and industry fields. However, your local or central registry may give you other instructions, such as to record information about the parents' I & O in these fields, with some kind of indication that these entries refer to the patient's parents. If this is the case, please follow the instructions of your local or central registry.

Homemakers are another special case. And it is important not to confuse "homemakers" with "housekeepers". If the patient worked only at his or her home, then record the occupation as "Homemaker" and the industry as "Own home." On the other hand, if the patient worked at someone else's home for pay, then record the occupation as "Housekeeper" and the industry as "Private home."

There are also jobs other than housekeeping that a person may perform in someone else's home. These include working as a nurse or babysitter. Be sure to record the appropriate occupation in these cases.

Now, if the patient was mostly a homemaker, but worked outside the home for any period of time, then enter the corresponding occupation and industry for the longest-held job outside the home rather than "homemaker". Note that this is an exception to the rule that the occupation with the greatest number of years should be recorded as "usual" occupation.

If the patient was a student at the time of diagnosis and never held a job, record as Occupation: "student" and Industry: type of school (such as "high school" or "college").

If the patient was part of the military for most of his or her working life, then record as Occupation: "Military" and Industry: "Military". No other specifics (such as rank) are needed.

If the patient was not a student or homemaker and had never worked at the time of diagnosis, then record as Occupation: "never worked" and Industry : "none".

Finally, "unknown" should be entered only after you've tried your best to find job information in the medical record. It is better to enter "unknown" than to leave the field blank.

Avoid these common incomplete entries.

- Try not to enter "retired". If the patient is retired, enter the kind of work he or she did during most of his or her working life if this can be determined. (Do not add retired.) For example, record "plumber" not "retired plumber".
- Don't enter "institutionalized", "disabled" or "unemployed" if patient was ever employed. Instead, record the longest-held occupation and industry.

- If the patient was self-employed, specify the kind of work performed in the occupation field. An example of an adequate

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entry would be: Occupation: Self-employed auto mechanic; Industry: Automobile repair.

- Enter "manager" only if the patient worked most of time managing a business, and include specifics. An example of an

adequate entry would be: Occupation: Operations manager; Industry: Automobile manufacturing.

Now it's time for some examples to test what you've learned.

Upon exiting the Flash module, follow these steps to complete the course:

1. Go to the CDC TRAIN Home Page,
2. Click on "My Learning" over on the right-hand side,
3. Then click on the "M" (Manage) button to the right of the course name and manually mark the course as "Completed".
4. Then you'll receive prompts to complete the assessment (test), then the evaluation.