#### Collection of Industry and Occupation (I & O) Data for Cancer Registry Professionals

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National Institute for Occupational Safety and Health (NIOSH)

Division of Surveillance, Hazard Evaluations, and Field Studies (DSHEFS)

### **Purpose of Training**

Goal: Improve the *quality* and *quantity* of occupational data captured from hospital/clinic records

#### Why?

To increase the value of using these data for public health surveillance and research with the ultimate goal of decreasing the incidence of cancers related to occupational exposures

## Outline

- 1. Background
- 2. Guidelines for collecting industry and occupation (I & O) data
- 3. Examples of adequate and inadequate I & O entries

# Note about "Adequate" vs. "Inadequate" 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.
- Data entries like the examples described as "adequate" are always preferred to entries like the examples described as "inadequate", but "inadequate" data entries are better than nothing.

# Facts about Cancer and Occupation

Cancer = leading cause of death for those under 85

Multiple factors contribute to cancer

- Interaction of hereditary, lifestyle, and environmental factors
- From 4% to 20% of cases may be related to occupation

# Examples of established links between occupational exposures and cancer



Industry / Occupation: Carpentry, furniture & cabinet-making Carcinogen: Wood dust Cancer site: Lung, nasal, nasopharynx





Industry / Occupation: Healthcare (sterilizing equipment) Carcinogen: Ethylene oxide Cancer site: Leukemia

Industry / Occupation: Sandblasting, brick-making Carcinogen: Silica Cancer site: Lung



Industry / Occupation: General construction, shipbuilding Carcinogen: Asbestos Cancer site: Pleura (mesothelioma), lung, larynx



#### **Other Examples:**

Industry/occupation	Carcinogen	Cancer site
Nuclear, aircraft, and medical devices industries	Beryllium	Lung
Production of plastics, rubbers, dyes, etc.; painting (as solvent)	Benzene	Leukemia, Non-Hodgkin's lymphoma

#### Examples of *other <u>possible</u>* links between occupational exposures and cancer that require further study



Industry / Occupation: **Pesticide application** Carcinogen: **Various pesticides** Cancer site: **Brain/CNS, leukemia, breast, others** 



Industry / Occupation: Hairdressers Carcinogen: Hair dyes Cancer site: Bladder, brain/CNS, leukemia, others

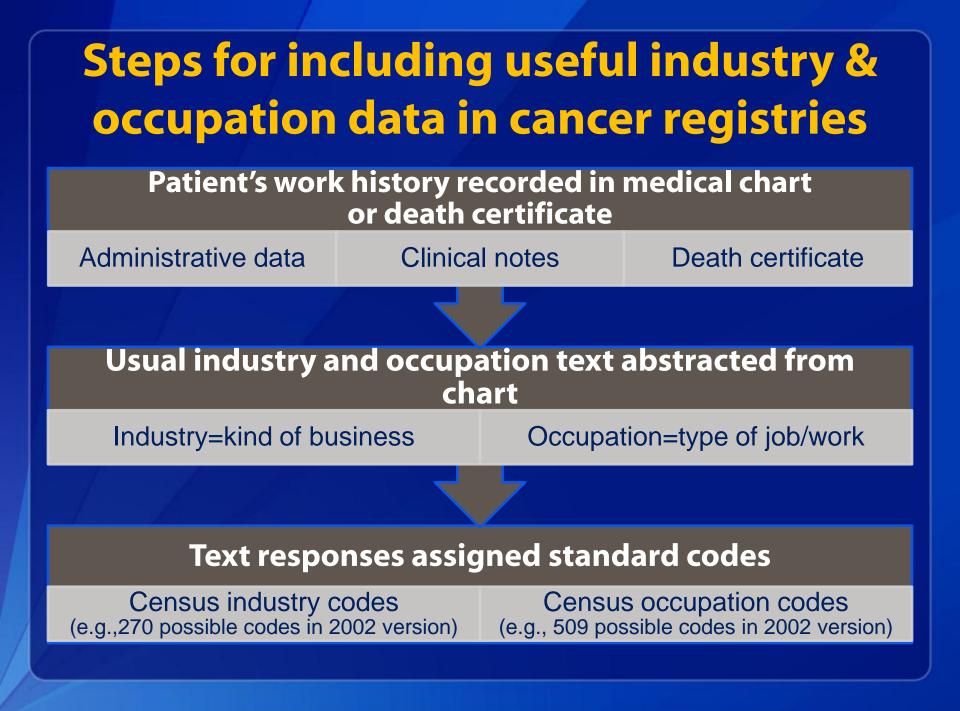
#### *Other <u>possible</u>* links (cont.)

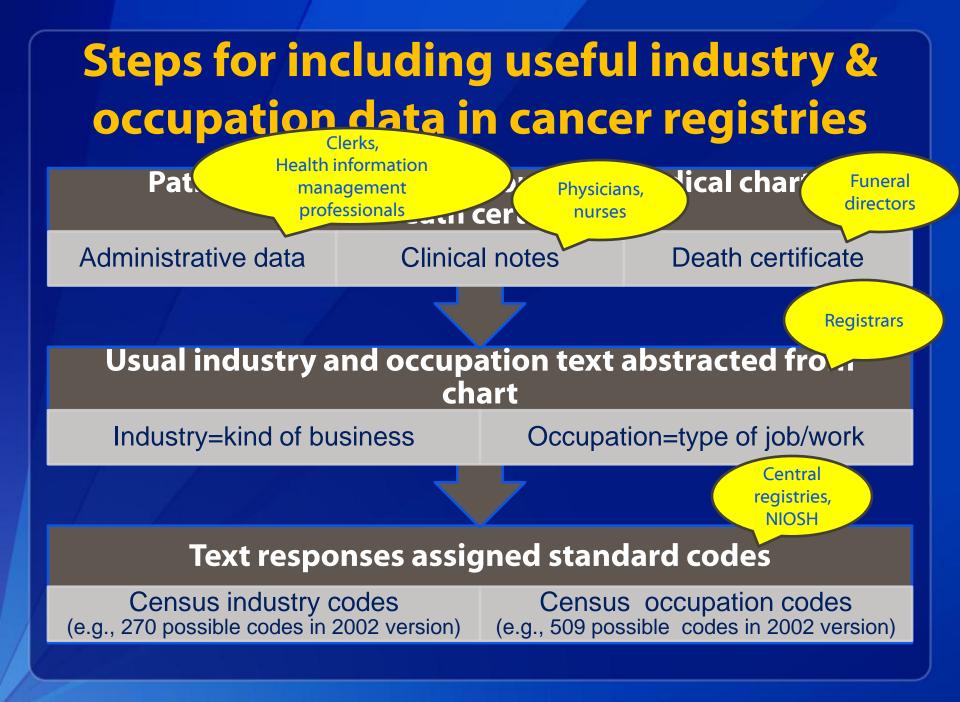
Industry / Occupation: Battery manufacturing, construction Carcinogen: Lead Cancer site: Brain/CNS, kidney, stomach



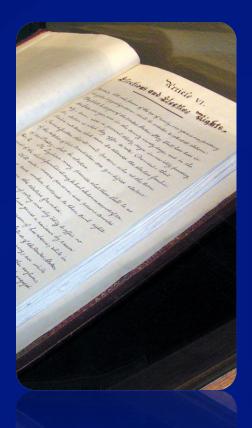
#### **Other Examples:**

Industry/occupation	Carcinogen	Cancer site
Computer manufacturing	Radiation, benzene	Brain/CNS, leukemia
Shift workers (e.g., nurses)	Circadian rhythm disruption	Breast
Firefighting	Products of incomplete combustion	Brain, others
Healthcare workers	Hepatitis B & C viruses	Liver
Carpentry, furniture & cabinet- making	Wood dust	Laryngeal





## Legal Basis for Collecting I & O Data



# **Purposes of collecting I&O data**

- Estimate cancer burden by industry and occupation
- Identify industries and occupations at high risk for cancer
- Generate hypotheses about occupational risk factors for further research
- Guide etiologic and intervention research and practices
- Serve as additional measures of socioeconomic status
- Help identify industrial groups or worksite-related groups in which cancer screening or prevention activities may be beneficial

So now that you know why it's important to collect I&O data on cancer cases, you may ask:

How are we doing? Is I&O data being collected by cancer registries?

Here is what some surveys have shown...

### 2001 NAACCR Survey

 The Collection and Use of Occupation and Industry Data by NAACCR Member Registries\*
 – Surveyed NAACCR (North American Association of Central Cancer Registries) member registries
 – 41 of 53 (77%) responded

\*Fulton JP, Chiaverini L, Roffers S, Curran D, Parrish P, Clutter G, Hall I, Jamison M, Newton C. In: Wu XC, et al. (eds). Cancer in North America, 1995-1999, Volume Three: NAACCR Combined Incidence. Springfield (IL): North American Association of Central Cancer Registries, April 2002, pp IV-1 - IV-8.

#### 2001 NAACCR Survey (cont.)

- Barriers cited to accuracy, completeness and usefulness of I & O data
  - Collection and coding of data is labor intensive
  - I & O data in medical records are inconsistent, incomplete, and not in a standard format
  - Hospitals do not have a standard protocol for the collection of I&O data

## 2008 NPCR Survey on Collection of I&O

- NPCR= National Program of Cancer Registries (run by CDC)
- 44 state cancer registries responded
  - 41 state registries (93%) reported collecting I&O data when available
    - 20 states use information from both medical records and death certificates
    - 18 states use medical records/hospital abstracts only
    - 3 states use death certificates only

So now that you know that there is room for improvement in the collection of I & O data, you may ask:

Can I&O data collection by cancer registrars be improved?

YES, and here is the evidence...



# Massachusetts Study: Improvement in I&O Data Collection

Type of I & O Data	Routine Record Review
Both I & O	27.8%
Any codable I & O Data	63.6%

Reference: Levy J, Brooks D, Davis L. Availability and quality of industry and occupation information in the Massachusetts Cancer Registry. Am J Ind Med. 2001 Jul;40(1):98-106.

# Massachusetts Study: Improvement in I&O Data Collection

Type of I & O Data	Routine Record Review	Detailed Record Review
Both I & O	27.8%	42.5%
Any codable I & O Data	63.6%	72.9%

Reference: Levy J, Brooks D, Davis L. Availability and quality of industry and occupation information in the Massachusetts Cancer Registry. Am J Ind Med. 2001 Jul;40(1):98-106.

# New Hampshire Study: Improvement in I&O Data Collection

Type of I & O Data	Routine Record Review (pre-training)
Both I & O	15.2%
Any codable I & O Data	22.8%

Reference: Armenti KR et al. Improving the quality of industry and occupation data at a central cancer registry. Am J Ind Med 2010;53:995-1001

# New Hampshire Study: Improvement in I&O Data Collection

Type of I & O Data	Routine Record Review (pre-training)	Detailed Record Review
Both I & O	15.2%	54.2%
Any codable I & O Data	22.8%	88.2%

Reference: Armenti KR et al. Improving the quality of industry and occupation data at a central cancer registry. Am J Ind Med 2010;53:995-1001

# New Hampshire Study: Improvement in I&O Data Collection

Type of I & O Data	Routine Record Review (pre-training)	Detailed Record Review	Routine Record Review (post-training)
Both I & O	15.2%	54.2%	47.7%
Any codable I & O Data	22.8%	88.2%	85.6%

Reference: Armenti KR et al. Improving the quality of industry and occupation data at a central cancer registry. Am J Ind Med 2010;53:995-1001

So now that you've seen that I & O data collection by cancer registrars can be improved, let's review:

# Guidelines for Collecting I & O Data

## **I & O Definitions**

Usual occupation

Type of job patient was engaged in for the longest time.

#### Usual industry

 Type of business or industry where the patient worked in his or her usual occupation.

# **I & O Definitions**

Usual occupation
 Example: Registered nurse







### **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 job information that is more likely to represent the usual I & O.

# Location of I & O Information in the Medical Record

- Face sheet
- Physician dictated reports
  - History & physical
  - Consult
  - Anesthesia notes
- Nurse's admitting notes



## Ways to Improve I & O Data Collection

- Review earliest available record to the last available record.
- Look beyond the face sheet for I & O information.

# Examples of *Usual Occupation* and corresponding *Usual Industry*:

#### **Usual Occupation:**

- Welder
- Electrician
- Janitor
- Mechanic, auto
- Bookkeeper
- Camera operator
- Student

## **Usual Industry:**

- Steel fabrication
- Electric power company
- City office building
- Engine repair shop
- Wholesale drugs
- Television station
- Junior college

## Notes on Usual vs. Current I & O

- 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.

#### Notes on Usual vs. Current I & O

#### Example:

NO

The patient worked for 20 years as a coal miner, and has worked for the last year as a Walmart greeter



Usual I & O: Industry=coal mine; Occupation=coal miner
Current I & O:Industry=department store; occupation=greeter

#### Notes on Usual vs. Current I & O

#### Example:

The patient worked for 20 years as a coal miner, and has worked for the last year as a Walmart greeter





**Usual I & O:**Industry=coal mine; Occupation=coal miner **Current I & O:**Industry=department store; occupation=greeter

#### When to Record Usual vs. Current I & O

So let's say we have a patient who 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)



# Usual vs. Current I & O Scenario #1 (ideal)

#### **Admission Face Sheet**

Employer: Walmart Occupation: Greeter

#### **Physician Admission Note**

Pt is a 56 y/o WM who retired from ACME chemical manufacturing as an engineer ...blah blah blah

• All the information in the previous slide is included in the medical record

#### **Record:**

- Industry: chemical manufacturing
- Occupation: engineer

## Usual vs. Current I & O Scenario #2

#### **Admission Face Sheet**

Employer: Unknown Occupation: Greeter

#### **Physician Admission Note**

Pt is a 56 y/o WM who retired from ACME chemical manufacturing ...blah blah blah

 Information about usual industry is available but there is no information about usual occupation. There is information about current occupation (greeter) though...

#### **Record:**

- Industry: chemical manufacturing
- Occupation: unknown

## Usual vs. Current I & O Scenario #3

#### **Admission Face Sheet**

Employer: Walmart Occupation: Greeter

#### **Physician Admission Note**

Pt is a 56 y/o WM retired engineer

...blah blah blah

 Information about usual occupation is available but there is no information about usual industry. There is information about current I&O (Walmart greeter) though...

#### **Record:**

- Industry: unknown
- Occupation: engineer

## Usual vs. Current I & O Scenario #4

#### **Admission Face Sheet**

Employer: Walmart Occupation: <u>Greeter</u>

#### **Physician Admission Note**

Ptisa 56 y/oWM

...blah blah blah

• No Information about usual industry or occupation is available but there is information about current industry & occupation (Walmart greeter)

#### **Record:**

- Industry: department store
- Occupation: greeter

### Relationship between Current vs. Usual I&O

- 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
  - Implication: current employment information (often what is found on medical record Face Sheets) can serve as a reasonable surrogate for longest-held job

Reference: Gómez-Marín O, Fleming LE, Caban A, Leblanc WG, Lee DJ, Pitman T. Longest held job in U.S. occupational groups: the National Health Interview Survey. J Occup Environ Med. 2005 Jan;47(1):79-90.

## Usual Industry: Abstracting Instructions\*

- Record the primary activity carried on by the industry at the location where patient was employed for the most number of years before diagnosis of this tumor.
- If the primary activity of the industry is unknown, record the name of the company (with city or town) in which the patient worked the most number of years before tumor diagnosis.
  - Examples
    - Ideal industry entry: Furniture store
    - Less ideal industry entry: Big Al's store, Los Angeles, CA

\* NAACCR Volume II: Data Standards and Data Dictionary

#### **Recording Usual Industry**

- 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.
  - Examples
    - Ideal industry entry: Retail furniture store
    - Less ideal industry entry: Store

#### Steps:

- First determine the *general* kind of business or industry.
  - These are some main categories:
    - Manufacturing
    - Sales: Wholesale / Retail
    - Agriculture

- Construction
- Mining
- Services
- Then describe the most *specific* function of the business/industry.

#### **General Categories**

- Manufacturing
- Wholesale
- Retail
- Construction

#### **Specific Functions**

Automobile Manufacturer, Food Manufacturer Wholesale Grocery, Plumbing Supplies Wholesale Retail Bookstore, Furniture Retailer Road Construction, Home Construction

## More Information about General Industry Categories

#### Manufacturing company:

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

#### • Wholesale company:

Buys, rather than makes, products in large quantities for resale to other retailers.

• Retailer:

Sells primarily to individual users.

#### Service establishment:

Provides services to individuals and organizations.

Ex: hotels, laundries, cleaning shops, advertising agencies, and automobile repair shops.

## More Information about General Industry Categories

#### Inadequate industry example: Automobiles

#### Manufacturing company:

Produces goods usually by means of industrial operations. Even though it sells its products in large quantities to other manufacturers, wholesalers, or retailers, it should not be reported as a wholesale company

#### • Wholesale company:

Buys, rather than makes, products in large quantities for resale to other retailers.

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## More Information about General Industry Categories

#### Manufacturing company:

<sup>P</sup> Adequate industry example: Automobile manufacturing ven though it sells its products in large quantities to other manufacturiers, wholesalers, or retailers, it should not be reported as a wholesale company

### Wholesale company:

Buys, rath Adequate industry example: Automobile wholesaler other retailers.

#### • Retailer:

Sells primarily Adequate industry example: Automobile retailer

#### Service establishment:

Provides services to individuals and organizations.

Ex: hotels, laundries, cleaning shops, advertising agencies, and automobile repairshops.Adequate industry example: Automobile repair shop

## When the Usual Industry is a Government Agency

#### Be specific :

- Record the level: Federal, state, county.
- Use full name of division/agency.
  - Examples: "City of Cincinnati Health Dept."

"U.S. Bureau of Census"

- If the agency is responsible for several different activities, report the specific activity in which the patient was engaged (if available)
  - Examples: "Health department immunization clinic"

"Health department sanitation services"

## Usual Occupation Abstracting Instructions (1)

- Be specific: General or vague terms are not satisfactory since they don't always provide enough information to code. Text field allows 100 characters
  - Inadequate: laborer
  - Adequate: residential bricklayer

## Usual Occupation Abstracting Instructions (2)

- Be descriptive: Enter the word or words which most clearly describe the kind of work or type of duties performed by the patient.
  - Inadequate: teacher
  - Adequate: preschool teacher OR high school teacher OR college teacher

## Usual Occupation Abstracting Instructions (3)

- Be complete: Occupation entries that give only the department or a place of work are unsatisfactory.
  - Inadequate: "worked in a warehouse," "worked in a shipping department."
  - Adequate: warehouse forklift operator

Special Cases: Children

If the patient is under 14 years of age:
 – Record "infant" or "child" in occupation and industry.

## Special Cases: Homemakers (and Housekeepers)

- If patient worked only at home, then record as
  - Occupation :"Homemaker"
  - Industry:"Own home"
- If patient worked at someone else's home then record as
  - Occupation: "Housekeeper" (or "Nurse", "Babysitter", etc.)
  - Industry:"Private home"



- If patient ever worked both inside and outside the home, then enter corresponding occupation and industry for longest held job *outside* the home. Do not report homemaker.
  - Note: This is an exception to the rule that the occupation with the greatest number of years should be recorded as "usual" occupation.

#### **Other Special Cases**

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

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





#### **Other Special Cases (cont.)**

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

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" then to leave the field blank.

#### **Avoid these common incomplete entries**

#### Try not to enter "retired".

 If retired, enter the kind of work patient did during most of his or her working life if this can be determined. (Do not record retired.)
 For example, record "plumber" not "retired plumber".

Don't enter "institutionalized", "disabled" or "unemployed" if patient was ever employed.

Record longest held occupation and industry.

#### Avoid these common incomplete entries (cont.)

If self-employed, specify the kind of work performed in the occupation field.

- Inadequate: Occupation: Self-employed
- Adequate: Occupation: Self-employed-auto mechanic; Industry: Automobile repair

Enter "manager" only if patient worked most of time managing a business, and include specifics.

- Inadequate: Occupation: Manager
- Adequate: Occupation: Operations manager; Industry: Automobile manufacturing

# Examples

- Face sheet
  - Retired
- History & physical
  - Patient is a homemaker and worked for 20 years as a sales clerk at Macy's.

- Face sheet
  - Retired
- History & physical
  - Patient is a homemaker and worked for 20 years as a sales clerk at Macy's.
- Industry
  - Retail, department store
- Occupation
  - Sales clerk

# Care Scena to 1

- Face sheet
  - Retired
- History & physical
  - Patient is a home sales clerk at macy s.
- Industry
  - Retail, department store
- Occupation
  - Sales clerk

Key points: Don't record "retired"! Don't record "homemaker"!

asu

- Face sheet
  - Painter
- Nursing assessment
  - Patient states that she is a self-employed artist with a studio above the garage in her home.

- Face sheet
  - Painter
- Nursing assessment
  - Patient states that she is a self-employed artist with a studio above the garage in her home.
- Industry
  - Self-employed in the arts or self-employed artist
- Occupation
  - Painter or artist

## Care Scenar 2

- Face sheet
  - Painter
- Nursing assess
  - Patient states that s studio above the
- Industry
  - Self-employed in the a ... or s
- Occupation
  - Painter or artist

<u>Key points:</u> Don't record just "selfemployed"! Be sure to differentiate between an artist painter and a house painter!

mp

d artist

Medical record

# Only information recorded is that the patient is retired from Caterpillar.

- Medical record
  - Only information recorded is that the patient is retired from Caterpillar.
- Industry
  - Large equipment manufacturing
- Occupation
  - Unknown

- Medical record
  - Only information record from Caterpillar.
- Industry

   Large equipment provide
- Occupation
  - Unknown

Key points: Don't record retired! Don't record "Caterpillar" (the company name) if you know for sure what the company does! Don't assume an occupation!

- Face sheet
  - Retired from Caterpillar
- History & physical
  - Patient worked for 35 years as an accountant at Caterpillar manufacturing plant.

- Face sheet
  - Retired from Caterpillar
- History & physical
  - Patient worked for 35 years as an accountant at Caterpillar manufacturing plant.
- Industry
  - Large equipment manufacturing
- Occupation
  - Accountant

- Face sheet
  - Retired from Caterpillar
- History & physic
  - Patient worked for S
     Caterpillar manufacture
- Industry
  - Large equipment manufac
- Occupation
  - Accountant

Key points: Don't record retired! Don't record "Caterpillar" (the company name) if you know for sure what the company does! Record the occupation if known!

- Face sheet
  - Employer: Carlinville Public Schools
- Nursing assessment
  - Patient retired 5 years ago after working for 25 years as a coal miner. He currently is a custodian for the Carlinville Public Schools.

- Face sheet
  - Employer: Carlinville Public Schools
- Nursing assessment
  - Patient retired 5 years ago after working for 25 years as a coal miner. He currently is a custodian for the Carlinville Public Schools.
- Industry
  - Coal mining
- Occupation
  - Miner

Face sheet

– Employer: Carlinville Pu

- Nursing assessn
  - Patient retired 5 years
     a coal miner. He current
     Carlinville Public Science
- Industry
  - Coal mining
- Occupation
  - Miner

<u>Key points:</u> Don't record retired! Don't record the current I&O if you know it wasn't the usual (longest-held) I&O!

- Face sheet
  - Employer:Walmart
- History & physical
  - Patient works part-time as sales clerk in the evenings at Walmart.

- Face sheet
  - Employer:Walmart
- History & physical
  - Patient works part-time as sales clerk in the evenings at Walmart.
- Industry
  - Department store
- Occupation
  - Sales clerk

- Face sheet
  - Employer:Walmart
- History & physical
  - Patient works part-time Walmart.
- Industry
  - Department store
- Occupation
  - Sales clerk

Key points: Record I&O for part-time jobs, if it's all you know! Don't record "Walmart" (the company name) if you know for sure what the company does!

- Face sheet
  - Employer: Walmart Super Center
- History & physical
  - Patient is an auto mechanic in the tire and lube department at Walmart.

- Face sheet
  - Employer: Walmart Super Center
- History & physical
  - Patient is an auto mechanic in the tire and lube department at Walmart.
- Industry
  - Auto repair
- Occupation
  - Auto mechanic

## Case <u>Senario</u>

Face sheet

Employer: Walman
History & physical
Patient is an auto mech department at Waln

Industry

Auto repair

### Occupation

Auto mechanic

Key point: If the patient works in a department of a large business that has a different function than the main business, record that department's activity in industry.

- Face sheet
  - Retired
- Medical record
  - Current admission has no information about occupation, but previous admissions document that patient worked at GE Aviation as an aircraft engine engineer.

- Face sheet
  - Retired
- Medical record
  - Current admission has no information about occupation, but previous admissions document that patient worked at GE Aviation as an aircraft engine engineer.
- Industry
  - Aircraft engine manufacturing
- Occupation
  - Engineer

- Face sheet
  - Retired
- Medical record
  - Current admission h. occupation, but previor patient worked at CF engineer.

Key points: Look back through the chart for I&O information if it's missing from the most recent admission!

- Industry
  - Aircraft engine manufacturing
- Occupation
  - Engineer

- Face sheet
  - Student
- History & physical
  - Patient attends Cincinnati State Technical and Community College. He works part-time in the campus cafeteria as a line cook.

- Face sheet
  - Student
- History & physical
  - Patient attends Cincinnati State Technical and Community College. He works part-time in the campus cafeteria as a line cook.
- Industry
  - Cafeteria
- Occupation
  - Cook

- Face sheet
  - Student
- History & physica
   Patient attends Cinch Community College. He cafeteria as a line c
- Industry

   Cafeteria
- Occupation
   Cook

<u>Key points:</u> If you know the patient was a student and had a job, record the job, even if part-time!

- Face sheet
  - Employer: ABC Industries in Asheville, NC
- Nurse's admitting note
  - Patient has worked for 20 years as the receptionist at ABC Industries.

- Face sheet
  - Employer: ABC Industries in Asheville, NC

### Nurse's admitting note

Patient has worked for 20 years as the receptionist at ABC Industries.

### Industry

- ABC Industries; Asheville, NC
- Occupation
  - Receptionist

### Face sheet

- Employer: ABC Industries
- Nurse's admitting
  - Patient has worked for .
     ABC Industries.

### Industry

- ABC Industries; Asheville, N
- Occupation
  - Receptionist

Key points: If you don't know any industry information except for the company name, then record the company name and the location (if known)!

### Face sheet

- Employer: ABC Industries
- Nurse's admitting
  - Patient has worked for ABC Industries.

### Industry

- ABC Industries; Ash
- Occupation
  - Receptionist

Key points: If you don't know any industry information except for the company name, the cord the come of the cord the come of the cord

Then you (or someone at the central registry) might be able to look the company up online to determine it's function.

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