

# **OCCUPATIONAL CARDIOVASCULAR AND LUNG DISEASES IN NAVAJO COAL MINERS**

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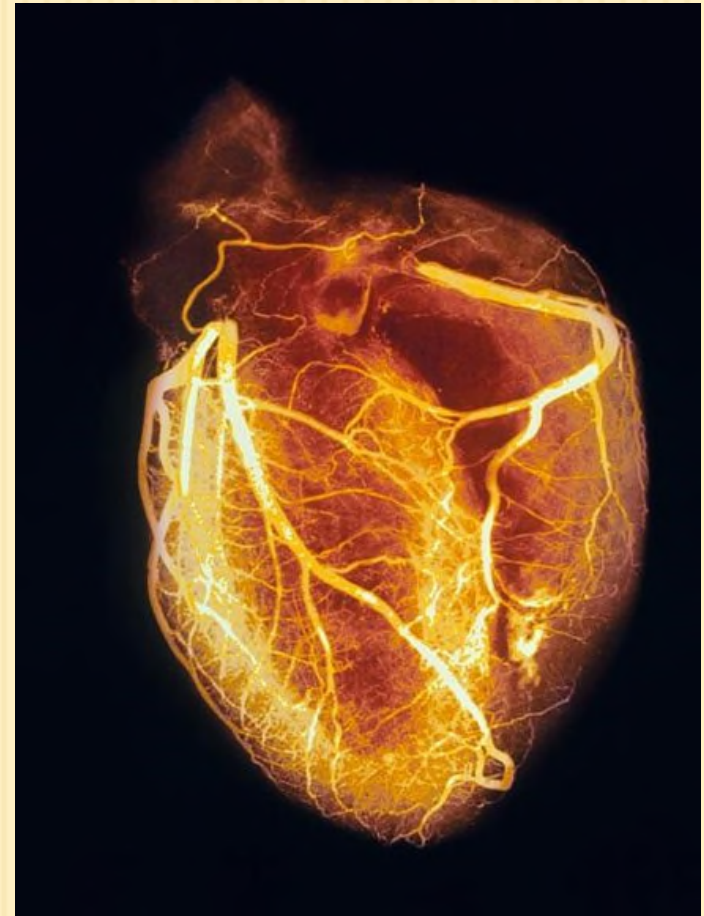
*7<sup>th</sup> Annual WestON Meeting, Sept. 2014*

# Overview: Cardiovascular disease (CVD)

- **Leading cause of death** in the US
- **> 81 million Americans** have CVD, at an estimated cost of \$503 billion in 2010
- **Multiple CVD risk factors** (personal and occupational)
- Estimated proportion of CVD associated with work-related factors ranges from **15 – 35%**


# Personal risk factors for CVD

- ❑ Smoking
- ❑ High lipids/cholesterol
- ❑ Physical inactivity
- ❑ Diet/alcohol
- ❑ Hypertension
- ❑ Obesity
- ❑ Diabetes mellitus
- ❑ Family history of heart disease



# Mining-related occupational risk factors for CVD

- Noise
- Particulates (PM 2.5)
- Stress (high demand/low control; shift work; long hours)
- Vibration
- Temperature extremes
- Carbon monoxide
- Some chemicals and metals (lead, solvents, carbon disulfide, nitrates)

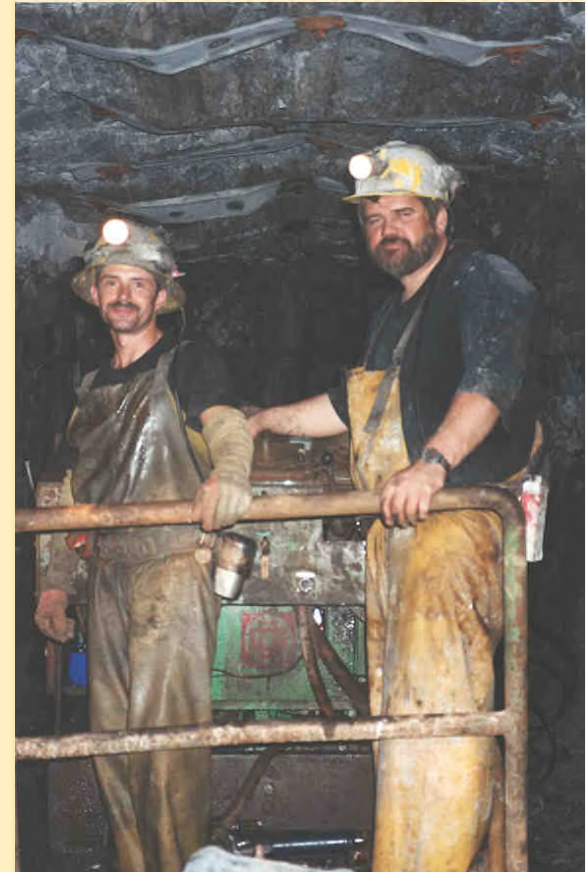


Workplace factors contribute to obesity, smoking, alcohol use, and lack of exercise as well as to work-family stress and conflict

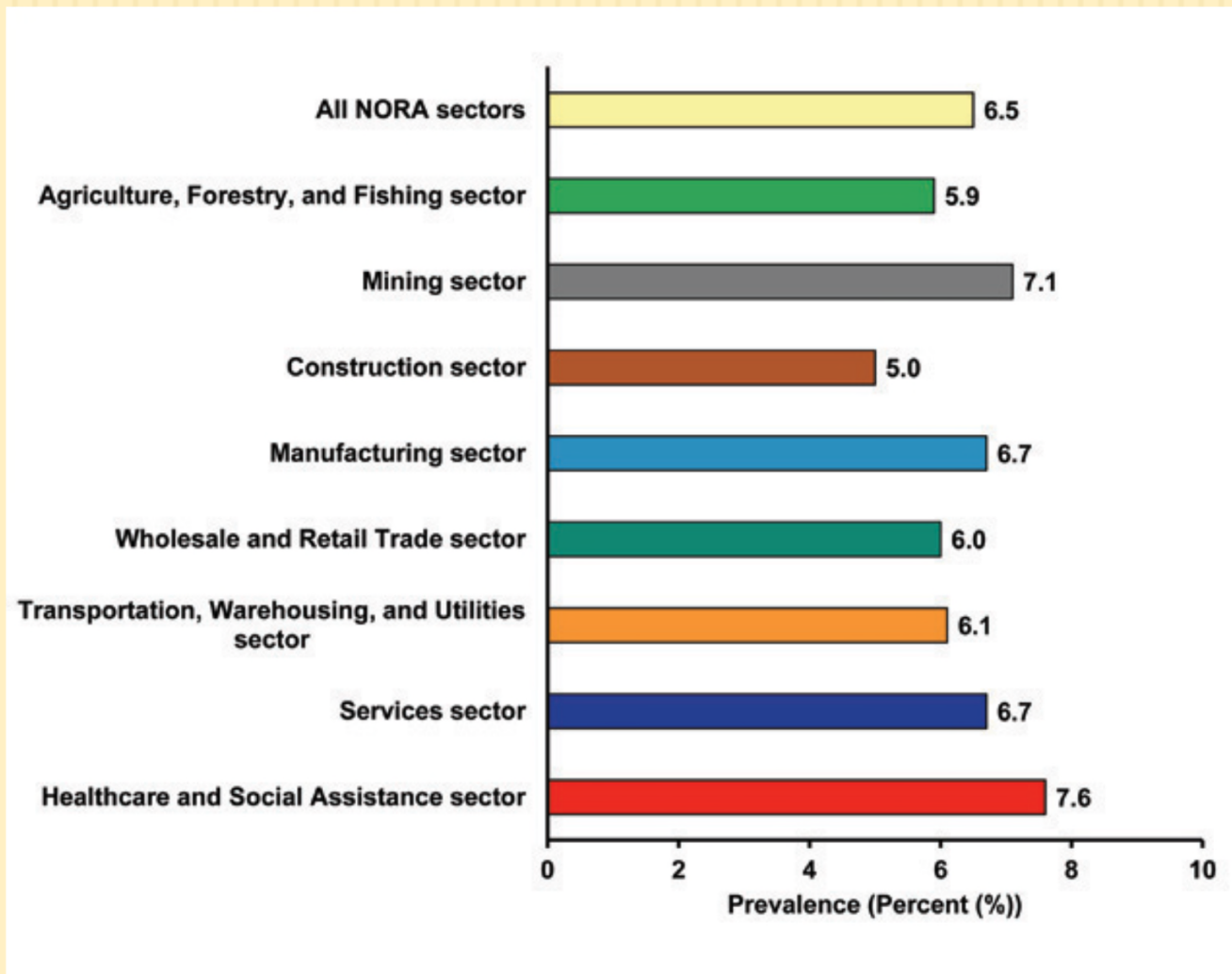
# Morbidity & disability among workers $\geq 18$ years in the Mining sector, 1997-2007

- Blue collar workers less likely to have health insurance, health screening, health prevention information
- More likely to be obese, less likely to exercise, more likely to report risky behaviors (smoking, drinking)

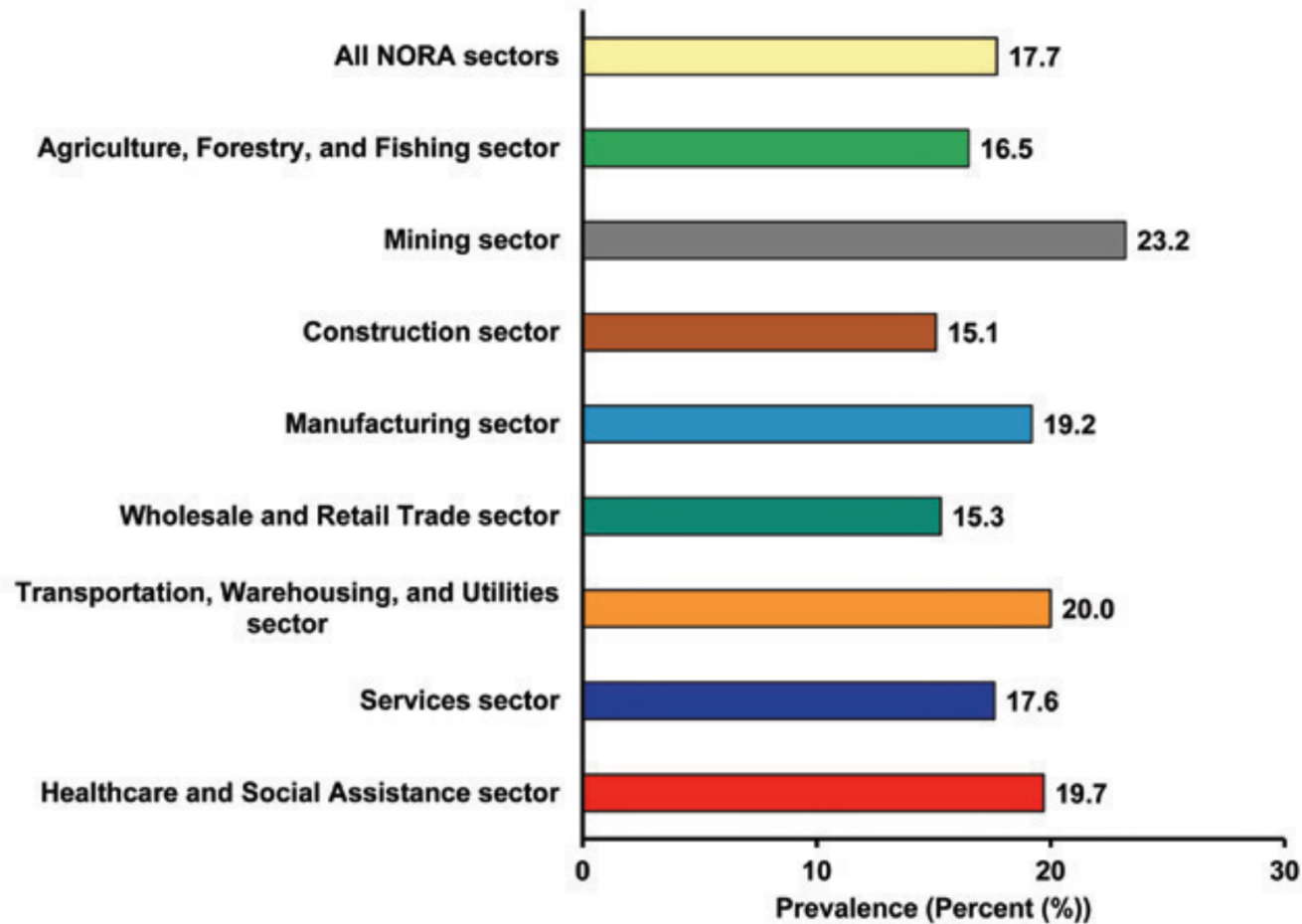
[NIOSH, 2012]



# Heart disease prevalence is high in the mining sector

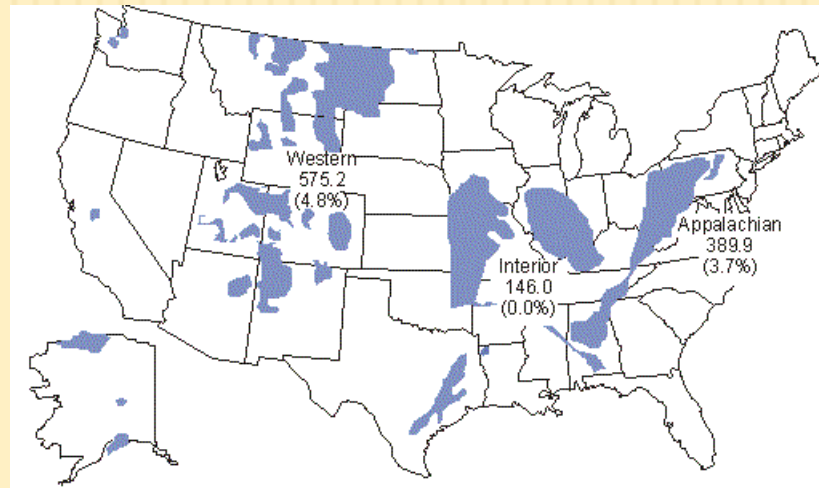


# High prevalence of hypertension in the mining sector (23.2%)






# Coal miners are at risk for work-related lung disease



□ **Lung** diseases from coal mine dust exposure:

- Black lung (CWP)
- Silicosis
- Emphysema
- Industrial bronchitis
- Diffuse interstitial fibrosis

# Miners Clinic Navajo coal miners 5 year medical screening program in Page, AZ



We've got our reasons why miners should be screened for lung conditions. Maybe you've got your own.

You'd do anything for your family — and taking care of yourself is one of the most important things you can do. Miners are at risk for many lung conditions. Early diagnosis and treatment make a difference, even if you are not having breathing problems right now.


**Get a FREE annual screening.**  
The Miners Clinic of Colorado at National Jewish Medical and Research Center in collaboration with Page Hospital, is offering free, in-depth screenings for mining-related illnesses.

**Miners Lung Screening Program For Retired and Active Miners**  
Page Hospital, 501 North Navajo Drive  
October 19 & 20

Call **1.877.BLK.LUNG** for more information or to schedule a confidential screening. Space is limited; call for an appointment.

**NATIONAL JEWISH**  
Medical and Research Center  
Global Leader in Lung, Allergic and Immune Diseases

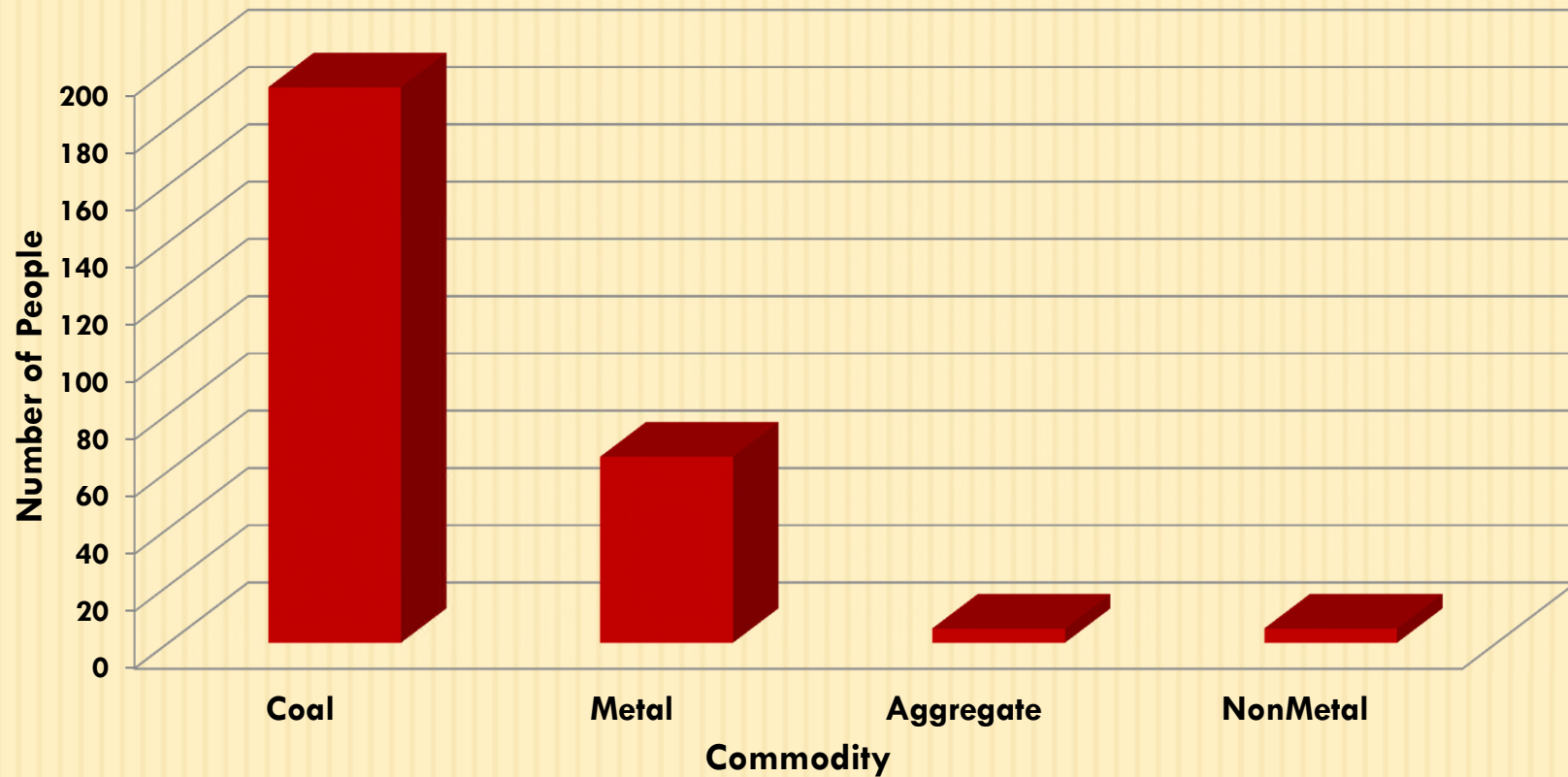
#1 respiratory hospital in the country.  
Since 1998. *U.S. News & World Report*



What do we know about rates of cardiovascular and lung disease in participating Navajo coal miners?

# Most of our Navajo patients are surface coal miners

Commodity Distribution For Navajo (N=231)

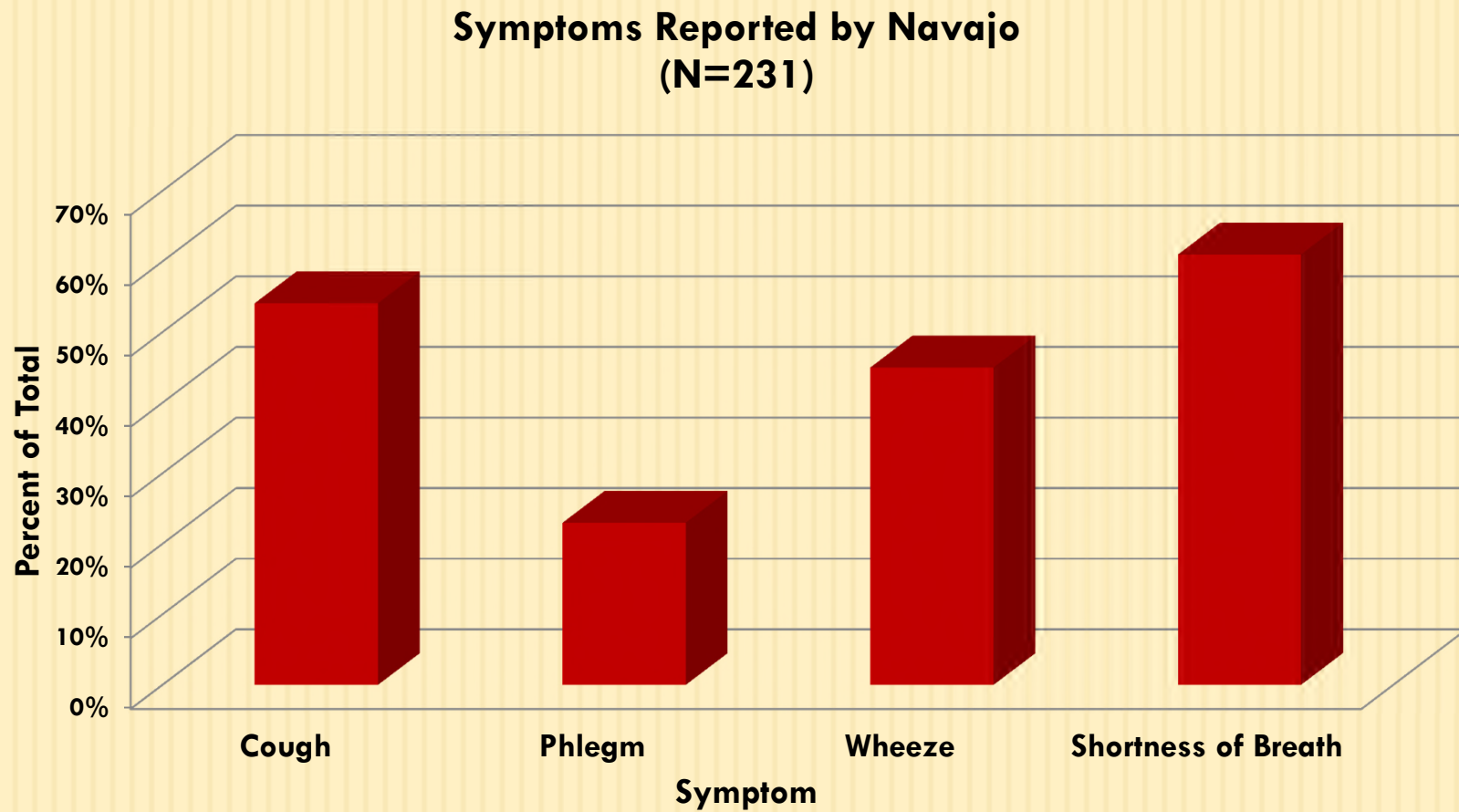


# Characteristics of 231 Navajo miners

- **Average age: 61.3 (10.3) years**
- **93% men**
- **Ever smoker: 12.6%** (compared to 48% in MCC patients total)
- **Average years worked as a miner: 20.8 yrs (13.4)**

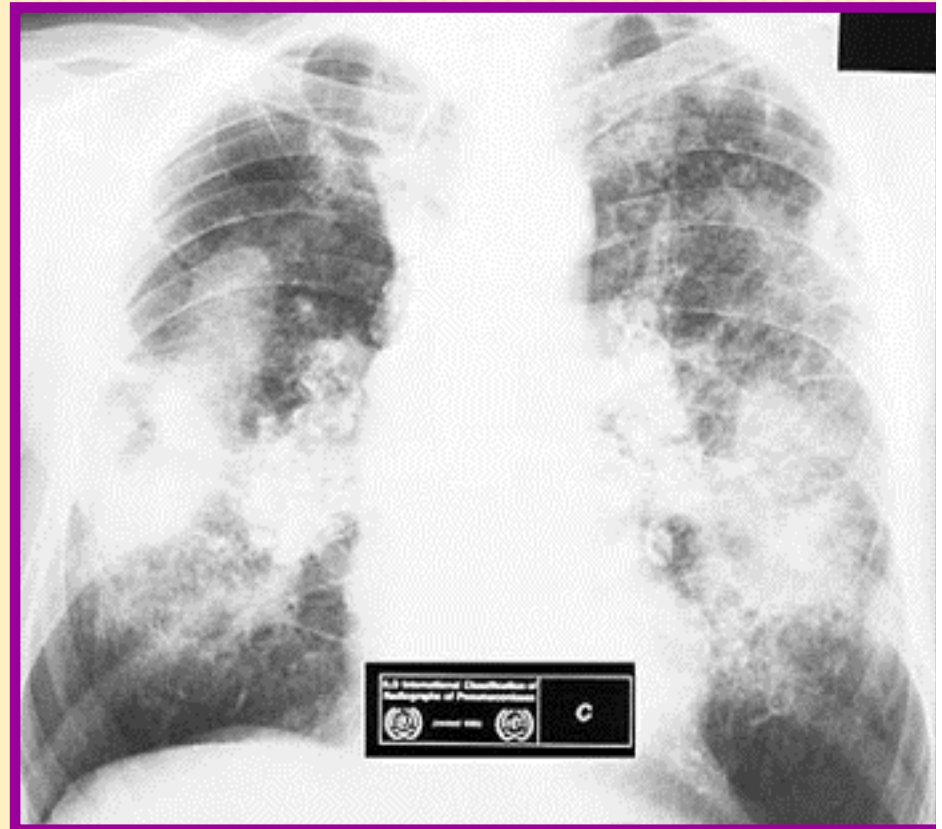


# Respiratory symptoms are common



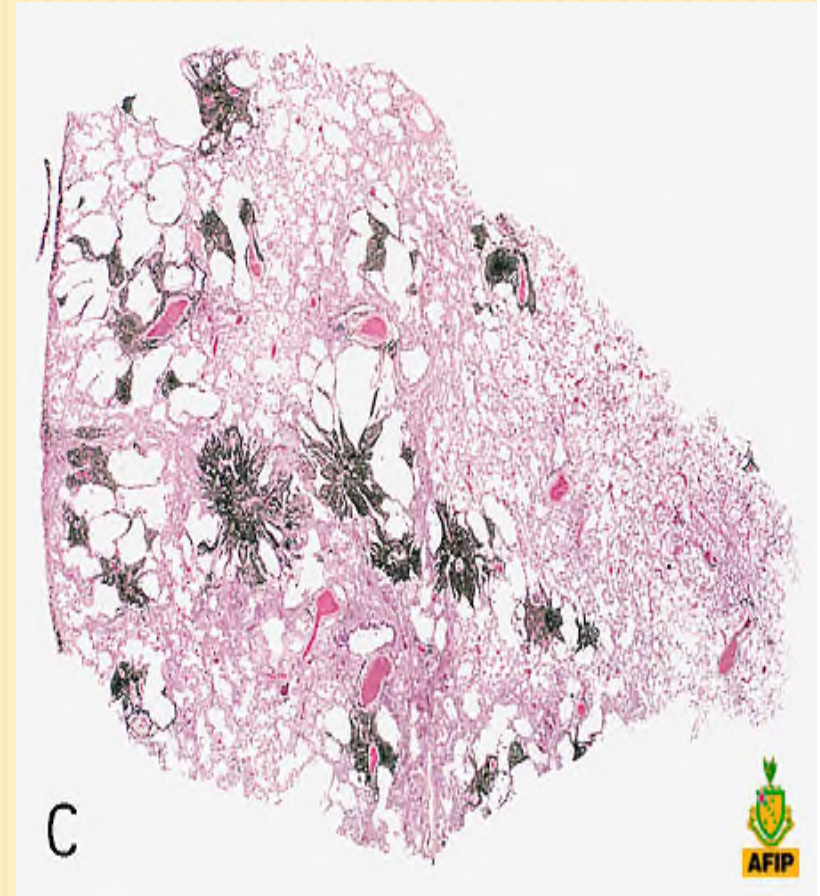
# Pneumoconiosis in 231 Navajo coal miners

- Abnormal chest x-ray profusion score on B reading: **24 (10%)**
  - 1/0=10
  - 1/1=9
  - 1/2=5
- Benefits counseling and assistance with DOL Black Lung claims



# Emphysema in 4-9% of participating Navajo coal miners

- COPD (LLN): **8 (4%)**
  - 7 never smokers
- COPD (GOLD): **17 (8.6%)**
  - 12 never smokers





# Hypertension in coal miners

## High blood pressure

- 38% in Navajo coal miners
- 43% in other coal miners

## Consequences of untreated hypertension

- 4 times as likely to die of stroke
- 3 times as likely to die of heart disease
- Chronic kidney disease

## High rates of treatable and preventable CV diseases risk factors in Navajo coal miners

1. Obesity (BMI>30): 41%
2. Obstructive sleep apnea symptoms: 17%
  1. Poor concentration/inattention
  2. Errors and accidents (2-3x MVA rates)
3. High blood pressure: 38%
4. Current smoking: 7%

# Implications and future directions

- Assure that miners with lung and heart disease get **medical and preventive care and follow up** (rehab, vax, meds, O<sub>2</sub>)
- Assure that miners with lung disease get the **benefits** they deserve
- Support efforts to **limit coal mine dust exposure**



# Miners Clinic team/acknowledgements

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Questions?

