

Twenty-Nine Year Summary of Silicosis in Michigan

Since 1988, Michigan has been identifying individuals who develop silicosis with the goal of targeting prevention actions. This is both the longest and only comprehensive surveillance system for silicosis in the United States. We recently reported on the 1,048 Michigan residents with confirmed cases of silicosis identified over 29 years in the *Annals of the American Thoracic Society* (1). Key findings were:

- The high percentage of obstructive lung disease (30% in never smokers and 44% in ever smokers) and restrictive lung disease (42% in never smokers and 32% in ever smokers). Only 25% of the individuals with silicosis had normal spirometry (Figure 1).
- Although the percentage of individuals with silicosis who had tuberculosis had decreased since 1988, the incidence of TB in individuals with silicosis was 1000-fold greater than in the Michigan general population (Figure 2).

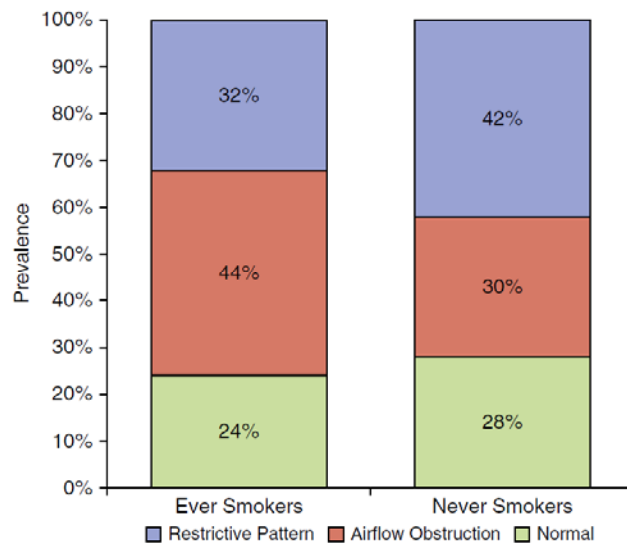


Figure 1*. Restriction, obstruction, and normal spirometry results by cigarette smoking status of confirmed silicosis cases, Michigan, 1988-2016

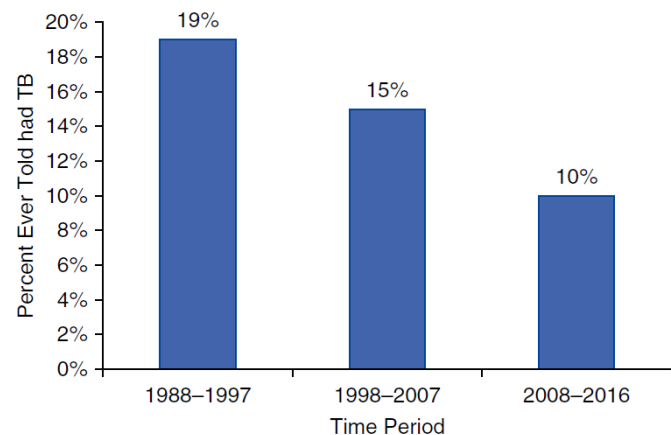


Figure 2*. Percentage of individuals ever told they had tuberculosis (TB), Michigan, 1988-2016

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- Respiratory diseases are the underlying cause of death on the death certificate in 45% of individuals with silicosis (COPD 14%, lung cancer 11%, unspecified interstitial fibrosis or respiratory failure 10%, pneumonia 6%, asbestosis or non-specified pneumoconiosis 3%, tuberculosis 0.5%, and sarcoidosis 0.5%). These percentages illustrate not only the respiratory morbidity of silicosis but also that the doctors completing cause of death on the death certificate are often not aware of the decedent’s medical history (i.e. only 11% of individuals with the advanced form of silicosis, progressive massive fibrosis, have silicosis listed on the death certificate).
- The source of silica exposure causing silicosis has changed with the percentage occurring among foundry workers decreasing and the percentage occurring among construction workers increasing (Figure 3).

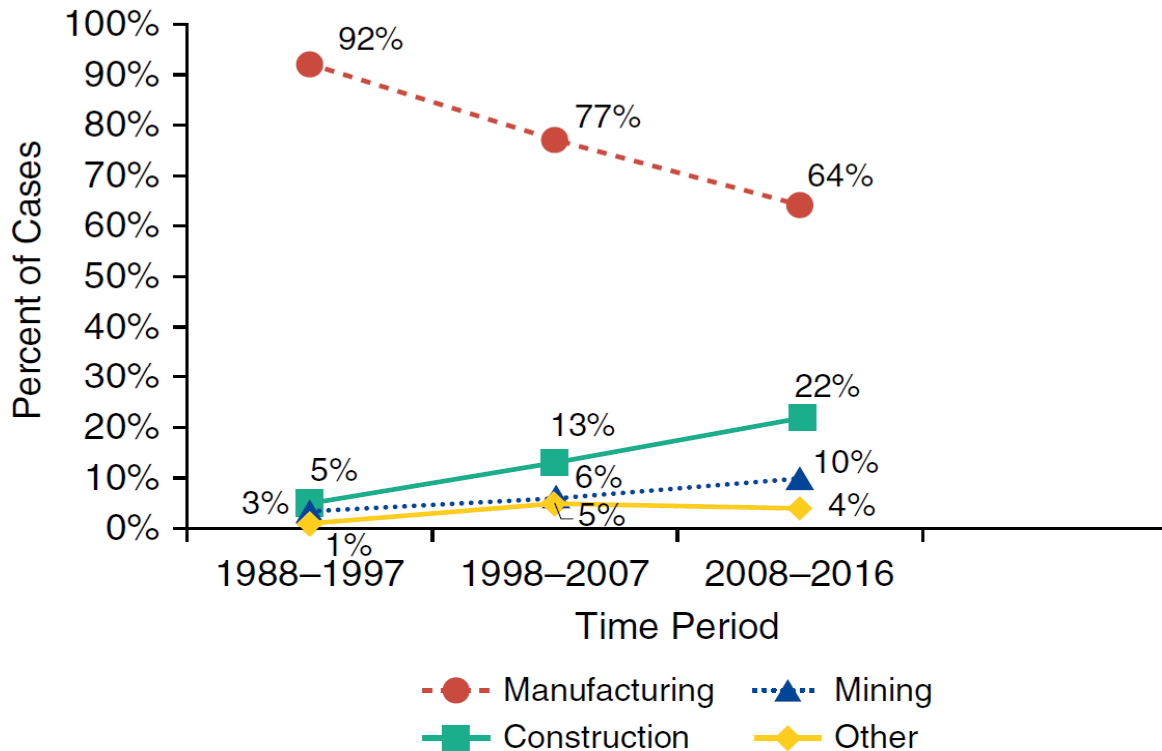


Figure 3*. Industry reported as source of silica exposure for confirmed silicosis cases, Michigan, 1988-2016

- The new Michigan OSHA standard requires for the first time that employers provide medical testing for workers exposed to silica with mandatory referral to a board-certified Pulmonologist or Occupational Medicine physician if the worker has a 1/0 profusion or greater classification on their radiography by a “B” reader (a B reader is a physician certified by the Federal Government to classify films for pneumoconiosis, there are five in Michigan (https://wwwn.cdc.gov/niosh-rhd/cwhsp/ReaderList.aspx?formid=USReaders&lastname=&state=MI+Michigan&sortkey=state&format=table&btnSubmit_US=Submit)).
- The number of cases of silicosis has decreased over time (Figure 3), however, new exposures in the granite and synthetic stone counter top industry, gas and oil fracking and the construction industry as well as the continued use of silica in abrasive blasting operations and the presence of 100 or so iron foundries in the state indicate the need for ongoing awareness of the adverse effects of silica.

- Because of past hiring and discriminatory practices (2), the incidence of silicosis in African Americans was 4.84 times greater than in whites (Figure 4).

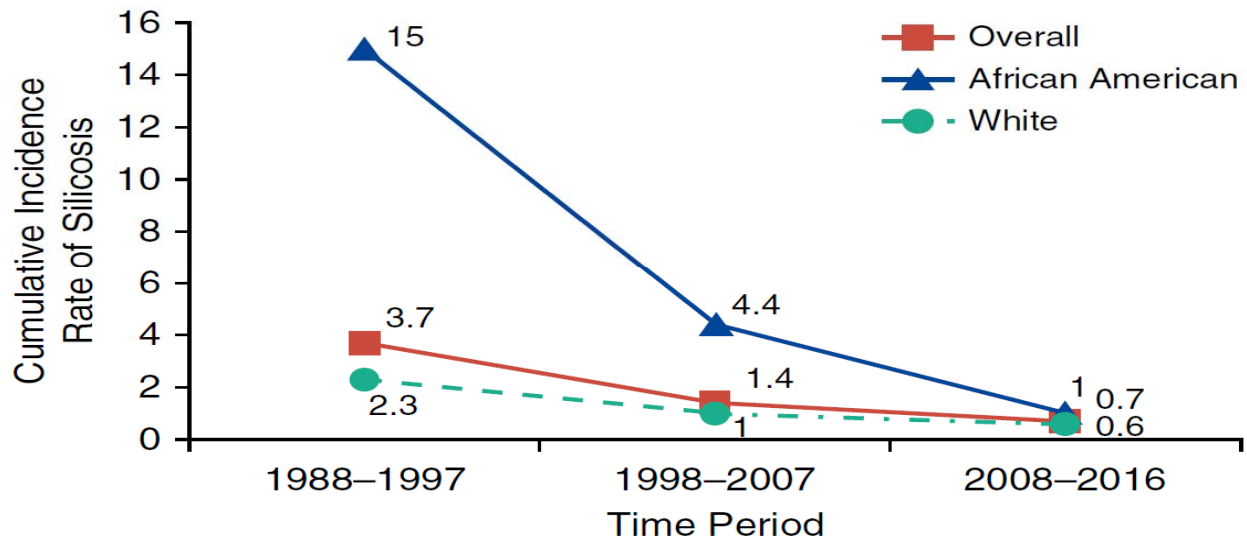


Figure 4*. Cumulative incidence rate of silicosis per 100,000 men aged 40 years and older, overall and by race, Michigan, 1988-2016

- Medicare is paying for most of the medical costs associated with silicosis. The percentage of workers with silicosis applying for workers' compensation has dropped from 42% in the 1988-1997 decade to 16% in the most recent period.

A recent article used medicare administrative data of beneficiaries ≥ 65 years old to estimate the incidence and prevalence of silicosis in the United States (3). They identified 10,026-19,696 individuals who had a medical encounter from 1999-2014 where silicosis was listed as one of the diagnoses. They estimated the national number of silicosis cases was 3,200-7,105, which is nearly identical to a previous estimate, which was based on an extrapolation from Michigan data (4).

If you have any questions about silicosis or the risk of other diseases associated with silica exposure (5-7), please contact Kenneth Rosenman, MD at 1-800-446-7805.

References

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News

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In this issue: V30n2: Twenty-Nine Year Summary of Silicosis in Michigan

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