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by [Danø H](#), [Skov T](#), [Lynge E](#)

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Underreporting of occupational cancers in Denmark

by Hella Danø, Stud Med,¹ Torsten Skov, MD,² Elsebeth Lynge, PhD¹

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Objectives The goal of the study was to investigate whether the reporting of occupational cancers has improved in Denmark since 1987 and whether medical records currently have better information on occupational exposures.

Methods All cases of pleural mesothelioma and sinonasal adenocarcinoma and 766 randomly selected adenocarcinomas of the lung diagnosed between 1983 and 1990 were identified from the Cancer Register. These cases were traced in the Register of Reported Occupational Diseases and in the records of the National Board of Industrial Injuries. Medical records for patients not reported to the Register of Reported Occupational Diseases were requested from hospitals and the data on work-related exposure were retrieved.

Results For pleural mesotheliomas the frequency of reporting increased from 43% in 1983—1987 to 53% in 1988—1990. The frequency of reporting of sinonasal adenocarcinomas decreased from 34 to 20% in these periods. Of the adenocarcinomas of the lung, 1% had been reported.

Conclusion Overall the reporting of occupational cancer has not improved in Denmark since 1987.

Key terms exposure, information, reporting.

Reporting of all known and suspected occupational diseases to the Danish Labour Inspection Service (DLIS) is compulsory for Danish physicians, and the reports also act as claims for worker compensation from the National Board of Industrial Injuries (NBII). However, Skov et al (1) found considerable underreporting when they studied 268 patients diagnosed with pleural mesotheliomas and sinonasal adenocarcinomas in the period 1983—1987. All told, only 34% of the patients diagnosed with these two classic occupational cancers had been reported. Examination of the medical records of patients who had not been reported revealed that, in most cases, the medical records did not contain sufficient information on exposure.

The objective of the present study was to answer the following questions: (i) has the reporting of occupational cancers changed since 1987, (ii) do the medical records now contain better information about occupational exposures, and (iii) what is the level of quality of information on occupational exposure in relation to adenocarcinoma of the lung, a cancer not as closely associated with occupational exposures?

Material and methods

All cases of pleural mesotheliomas and sinonasal adenocarcinomas and 766 randomly selected adenocarcinomas

of the lung diagnosed between 1983 and 1990 and notified before November 1992 to the Cancer Register were included in the study.

The DLIS keeps the Register of Reported Occupational Diseases, which forms the basis both for priority setting by the labor inspectorate and for decisions on compensation made by the NBII. All notified cases coded by the DLIS as benign or malignant respiratory diseases diagnosed between 1983 and 1990 were retrieved from the Register of Reported Occupational Diseases, and the mesotheliomas, sinonasal adenocarcinomas, and lung cancers were subsequently identified manually.

The two retrieved data sets were linked by means of personal identification numbers, which are used in both registers. Patients reported to the Cancer Register but not recorded in the Register of Reported Occupational Diseases were furthermore sought in the data base of the NBII by means of the personal identification number.

Medical records for patients diagnosed with pleural mesothelioma and sinonasal adenocarcinoma in 1989—1990, and not recorded in the Register of Reported Occupational Diseases, were requested from the relevant hospital departments. The clinical course was often followed by requesting hospital records from more departments. Records were requested for 54 patients and obtained for 42 (most of the patients with missing records

¹ Danish Cancer Society, Copenhagen, Denmark.

² Danish Institute of Occupational Health, Copenhagen, Denmark.

came from the same hospital). For patients with adenocarcinoma of the lung, the hospital records were requested for only 46 patients randomly selected among the 190 patients not notified to the DLIS. Data about the diagnosis and exposure were extracted from the records. The patients were classified into seven categories as shown in table 1. When a patient had more than one hospital record, the best category was chosen as representative.

Results and discussion

Reporting frequency. Of the 428 pleural mesotheliomas, 198 (46%) had been reported to the DLIS or NBII. The frequency of reporting increased slightly from 43% in 1983—1987 to 53% in 1988—1990. The reporting increased from 51 to 59% for the men and from 20 to 27% for the women. Of the 64 sinonasal adenocarcinomas, 19 (30%) had been reported to the DLIS or NBII. The frequency of reporting decreased from 34% in 1983—1987 to 20% in 1988—1990. Of the sample of 766 adenocarcinomas of the lung, only 9 (1%) had been reported to the NBII. The frequency of reporting was 1% in both 1983—1987 and 1988—1990.

Exposure data in medical records. Table 1 shows the exposure history as recorded in the hospital medical records for patients diagnosed with pleural mesothelioma, sinonasal adenocarcinomas, and adenocarcinomas of the lung and not notified to the DLIS or NBII. The table includes both the data from the study undertaken by Skov et al (1) for the period 1986—1987 and the data collected for the present study for the period 1989—1990.

Among the pleural mesotheliomas and sinonasal adenocarcinomas diagnosed in 1989—1990, we found two patients with a positive exposure history in the hospital medical records but without notification to the DLIS or

NBII. We found 12 patients with a negative exposure history and 20 patients diagnosed alive and with no or only a poor exposure history. Seven patients were diagnosed postmortem, and for one patient the diagnosis in the hospital medical records differed from the one recorded in the Cancer Register. The numbers in 1989—1990 were similar to those of 1986—1987 apart from a lower number of postmortem diagnoses, which dropped from 18 to 7. The overall autopsy rate dropped in Denmark from 31% in 1986 to 20% in 1990 (5, 6). Of the adenocarcinomas of the lung, 7% had an exhaustive negative exposure history, and 11% had such scarce information on exposure that exposure could not be ruled out with reasonable reliability. Eleven percent had a positive exposure history but were not reported to the DLIS or DBII (eg, he had, as a skilled builder, slated four roofs with asbestos or he had as a carpenter, been exposed to asbestos).

Concluding remarks. The present study was undertaken to test whether the reporting of occupational diseases has improved in Denmark since 1987. In this updated analysis 42% of the 332 patients diagnosed with pleural mesothelioma or sinonasal adenocarcinoma in 1983—1987 were reported with occupational cancer. Among the 160 patients diagnosed with these diseases in 1988—1990, 49% were reported with occupational cancer. The proportion of reported patients thus increased from 42% in 1983—1987 to 49% in 1988—1990. The increase fell entirely within the group of pleural mesotheliomas, whereas a decrease was recorded in the small group of sinonasal adenocarcinomas. Overall we must therefore conclude that the reporting of occupational disease has not improved in Denmark since 1987. The present study furthermore shows that adenocarcinomas of the lung are poorly reported.

Table 1. Evaluation of the hospital records for patients with pleural mesothelioma and sinonasal adenocarcinoma diagnosed in 1986—1987 and 1989—1990 and for patients with adenocarcinoma of the lung diagnosed in 1989—1990 and not reported to the Danish Labour Inspection Service or the National Board of Industrial Injuries.

Category	Pleural mesothelioma and sinonasal adenocarcinoma				Adenocarcinoma of the lung	
	1986—1987 patients (1)		1989—1990 patients		Number	%
	Number	%	Number	%		
Exposure history positive ^a	3	6	2	4	5	11
Exposure history negative ^b	10	20	12	22	3	7
Exposure history of poor quality ^c	4	8	3	6	5	11
No exposure history, patient alive at diagnosis ^d	16	31	17	31	25	54
Postmortem diagnosis only ^e	18	35	7	13	4	9
Recorded diagnosis incorrect	—	—	1	2	2	4
Hospital record missing	—	—	12	22	2	4
Total	51	100	54	100	46	100

^a The medical records contained a positive exposure history for asbestos or wood dust.

^b The medical record contained a reasonably exhaustive negative exposure history.

^c The information on exposure was so scarce that exposure to asbestos or wood dust could not be ruled out with reasonable reliability.

^d No data were found in the medical records about exposure, even though the diagnosis was made prior to death.

^e The final diagnosis did not arrive until after death.

The neglect of reporting has two major consequences. First, the individual patient is cut off from his or her legal right to compensation. Second, the labor inspectorate is provided with suboptimal data for workplace inspection and regulation.

For "signal cancer" like pleural mesotheliomas and similar occupational diseases with a clear etiology, automatic transfer of data from the hospital discharge register to the labor inspectorate would be a useful alternative to the traditional notification procedure.

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