Cervical cancer and screening in Denmark

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In Denemarken functioneren naast elkaar verschillende systemen om cervixcarcinoom in een vroeg stadium op te sporen. In enkele districten maken vrouwen met de hun toegezonden pipetten als het ware hun eigen uitstrijkje. In andere streken krijgen vrouwen van de regionale gezondheidsdienst periodiek bericht dat het tijd wordt om zich (weer) voor een uitstrijkje tot de huisarts te wenden. Daarnaast kent men in Denemarken ook de in Nederland bekende systemen.
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Cervical cancer in Denmark

In Denmark 300 deaths per year are due to cervical cancer, 600 new cases of cervical cancer are diagnosed, and 1150 cases of carcinoma in situ and 1350 cases of dysplasia are notified yearly to the Danish Cancer Registry.[1]
The incidence of cervical cancer is high in Denmark compared with the incidence in most other countries. In the mid 1970's the age standardized rate (world population) was 23.0 in Denmark compared with 12.7, 8.5 and 19.0 respectively in Sweden, Finland and Norway. Cancer incidence figures from areas in other European countries show that the incidence rate in Denmark comes close to incidence rates from GDR, Hamburg and Saarland, whereas incidence rates from areas within both the UK, France, Switzerland, Hungary, Italy and Spain are below.[2]
In 1943-47 an annual number of 600 cases of invasive cervical cancer were registered in Denmark. In 1963-67 the annual number had increased to 900, but in 1978-82 the number had decreased again to 600.
Table 1 shows that the age standardized rate (world population) increased from 24.5 annual cases per 100,000 women in 1943-47 to a maximum of 31.7 annual cases per 100.000 women in 1963-67. The so far lowest age standardized rate was seen in 1978-82 with 18.3 annual cases per 100.000 women. The increase in the incidence from 1943-47 to 1963-67 effected all women above age 30, but mainly women below age 60 have benifited from the subsequent decline. Consequently, a changing age pattern is observed; the highest incidence was seen previously around age 40-50, whereas the highest incidence in recent years is seen around age 60-70.[3 8]

Pap smears

A nation-wide screening programme for cervical cancer and its precursors has never been established in Denmark, but some counties and municipalities have locally organized programmes. Pap smears are taken in Denmark both by hospital departments and out patient clinics, by GPs and private gynecologists as a part of the normal clinical work, and by GPs and women themselves in organized screening programmes. Reading of smears is carried out both in hospital departments of pathology and by pathologists in private practice.

Table 1. *Incidence of invasive cervical cancer in Denmark, 1943-1982.*

Period	Yearly number of cases	Standardized rate per 100.000
1943-47	587	24.5
1948-52	671	26.3
1953-57	760	28.5
1958-62	858	31.1
1963-67	904	31.7
1968-72	805	27.2
1973-77	714	22.3
1978-82[a]	616	18.3

[a] Preliminary figures

As the smear-taking activity is neither centralized nor coordinated it is suspected that the activity implies an unnecessarily frequent screening of the majority of the highly motivated women – that is once a year – but does not reach poorly motivated women to a sufficient extent. According to information from the organized screening programmes the last group includes women at greatest risk of cervical cancer.[4 5]
Due to the complicated structure it is difficult to obtain statistical information on the smear-taking activity in Denmark. However, it is estimated that a total of 550,000 smears were taken in 1980; a sufficient number to cover the whole female population with an organized programme including one smear every second or third year.[6]

Hospital departments. Pap smears were taken in hospital departments of gynecology and obstetrics in the Copenhagen area in the mid 1950's but Pap smears did not become a common tool in gynecological departments in Denmark before the late 1960's. All smears taken in hospitals are analyzed by the hospital departments of pathology.

GPs and private gynecologists. All service provided by GPs and private specialists in Denmark is covered by the national health insurance scheme. Payment to private pathologists for analysis of smears became part of the agreement between the Medical Association and the National Health Insurance in 1965, and payment to GPs for smears became part of the agreement in 1969. For private gynecologists no special fee is paid for smears, as these are considered a natural part of a gynecological examination.

Local screening programmes. It is up to the single counties in Denmark to decide whether they want to set up an organized screening programme or not. During the last twenty years ten organized programmes were commenced (*table 2*). The early programmes concentrated on women aged 40-50, but the age of invited women has gradually declined over the years. By 1980 some 40 per cent of women aged 30-49 were covered by the organized programmes. A programme based on mailed pipettes is coordinated from a central National Health Insurance office in the county.

The pipettes are mailed directly to the private addresses on women in the selected age-groups. Used pipettes are returned to the central office from which they are distributed to departments of pathology within the county. Women with positive pipettes are called for examination in the out-patient clinic at a county hospital.

In a programme based on smears taken by GPs letters are send to women in the selected age-groups inviting them to visit their GP for a gynecological examination. Smears taken by GPs are returned to the central office and further distributed to pathological departments. In counties with organized programmes GPs are paid a special fee for smear-taking and completing a questionnaire. If a smear is positive the department of pathology will inform the GP, and the GP will contact the patient for further follow-up.

Distribution of smears

In 1979 a total of 470,000 smears were taken outside the Copenhagen area; approximately 56 per cent were taken by GP on clinical indication, 31 per cent by hospital departments, and 13 per cent by GPs or the women themselves in organized programmes. An equivalent calculation can not be made for the Copenhagen area due to a special agreement for GPs in these municipalities.

There is a great difference between counties in the distribution of smears by source depending on whether the county runs an organized programme or not. *Table 3* shows the number of smears per women aged 20-59 in 1979 in three counties. Århus county has no organized screening programme and the majority of smears are taken by GPs on clinical indication. Frederiksborg county has an organized programme based on mailed pipettes, and *table 3* shows that the number of pipettes is almost equivalent to the number of smears taken by GPs. The total screening activity in Frederiksborg county in 1979 was two times the total activity in Århus county; 0.60 and 0.30 smears per year per woman, respectively. In Storstrøm county an organized programme was based on smears taken by GPs, and the number of smears taken in the programme was equivalent to the number of smears taken by GPs on clinical indication. Despite the existence of an organized programme the total activity in Storstrøm county was equivalent to the total activity in Århus county; *table 3* shows that this is mainly due to a low

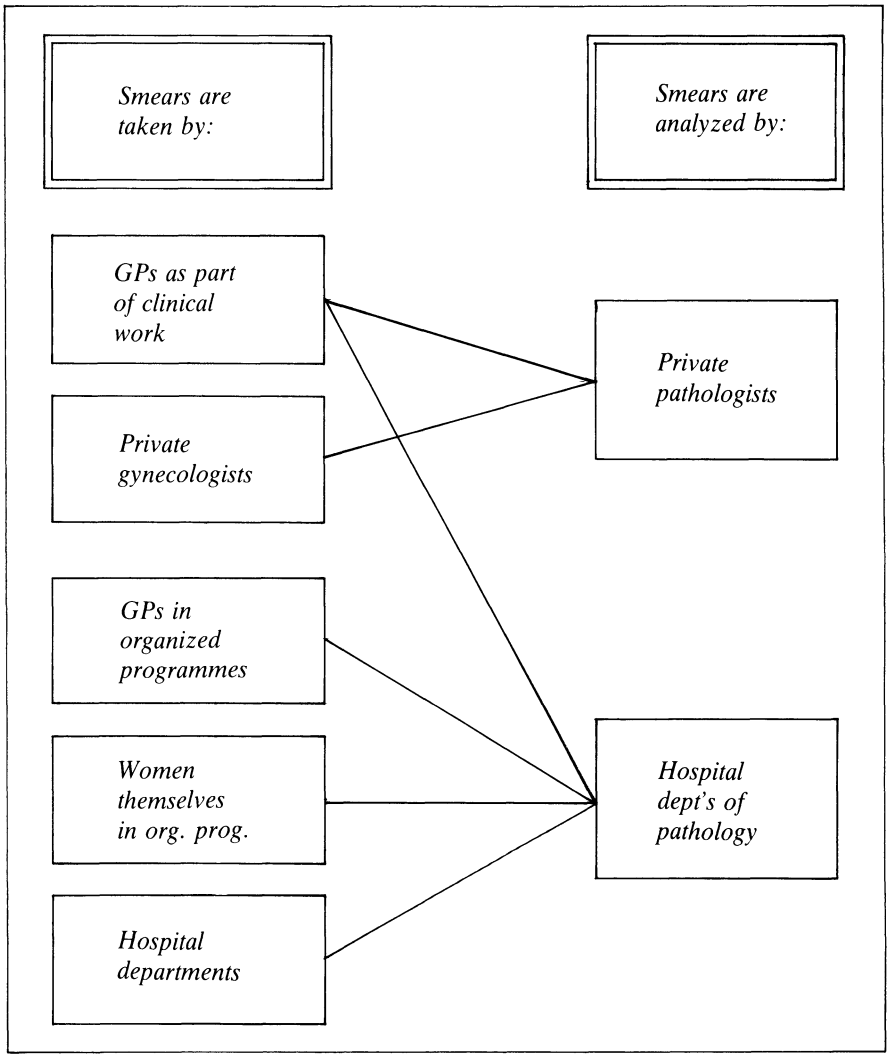
Table 2. *Screening programs in Denmark.*

Year	Place	Method
1962	Frederiksborg municipality	Mailed pipettes
1967	Storstrøm county	Smears taken by GP's
1967	Copenhagen municipality	Mailed pipettes
1967	Samsø (small island)	Smears taken by GP's, pipettes distributed by GP's
1968	Copenhagen county	Smears taken by GP's
1972	Frederiksborg county	Mailed pipettes
1975	Roskild county	Mailed pipettes
1979	Vejle county	Smears taken by GP's
1979	Sønderjylland county	Smears taken by GP's
1981	Bornholm county	Smears taken by GP's

Table 3. *Smear-taking-activity in selected counties in 1979. Number of smears per woman aged 20-59.*

County	GP's	Programme		Hospital	Total
		GP's	Women		
Frederiksborg	.23	–	.27	.10	.60
Storstrøm	.13	.12	–	.09	.34
Århus	.22	–	–	.08	.30
All counties	.23	.03	.03	.09	.37

Figure. *Organization of the smear-taking activity in Denmark.*



number of smears taken by GPs on clinical indication.
The data consequently indicate that in the areas where there is an organized screening programme based on smears taken by GPs, the GPs tend to restrict the number of smears taken on clinical indication, whereas this is not the case in areas with organized programme based on mailed pipettes. Available data on the percentages of women covered by the screening activity indicate the same high percentages from Stortstrøm and Frederiksborg counties, 80-90 per cent on a three year period, contrasted by a lower percentage of 40-50 per cent in areas without organized programmes.

Computerized registration

In several counties a computerized registration has been commenced of all diagnoses made within the departments of pathology. In these registration systems all data are stored by personal identification numbers, and these registration systems have consequently provided a tool for merging the smear-taking activity of GPs with the smear-taking activity in organized programmes and in hospital departments. Based on these registration systems it is possible to postpone invitation to women with the registered smear within the recommended time interval. It is also possible to identify women without a smear within the recommended time interval and restrict invitation to this group.
It is a precondition for a coordination that all smears are analysed in pathological departments with access to computers. In 1978 counties obtained the right to request GPs to forward all smears to pathological departments in county hospitals. In the present situation where this is a demand for limitation of health care expenditures coordination of the smear-taking activity has been taken up by several counties in order to restrict the number of repeated smears. Coordination is depending on a sufficient capacity in the departments of pathology which is still not available in all counties.

Recommendations

As a consequence of the lack of a nation-wide screening programme, and as a consequence of an unequal distribution of the available ressources, the Danish Association of Pathology and Cytology and the Danish Association of Obstetrics and Gynecology in 1983 have set up recommendations for screening against cervical cancer.[7] The recommendations are not an organized screening programme with for instance mailed „calling in's" and centralized registration. Actually, the recommendations are guidelines for the general practioners and the gynecologists to follow in women with no suspicion of disease (i.e. screening).
The main points of the recommendations are:

- Prophylactic cytology every three years from the age of 23 until the age of 41.
- Prophylactic cytology before the age of 23 in cases of a woman's contact with the Health Services, for instance for anticonception, pregnancy or venereal disease.
- Prophylactic cytology every five years from the age of 41 until the age of 60, provided that the cytologies before age 41 are all negative.
- If the first prophylactive cytology is performed after the age of 30 a repeat cytology is recommended within 6-12 months.
- In women at high risk, for instance very early onset of sexual life, several coital partners, or partners with several coital partners, prophylactic cytologies are recommended to be performed with the same intervals as mentioned above, because no evidence is at hand suggesting a faster development or progression of precancerous lesions in this group of women.

It is emphasized that the recommendations apply to women with no history of previous cervical neoplasia, and that diagnostic cytology be used in cases of gynecologic symptoms.

[1] Danish Cancer Registry. Cancer incidence in Denmark 1978, 1979 and 1980. Copenhagen: Danish Cancer Society, 1983.
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[3] Lynge E, Storm HH. Cervix cancer og cervicale prækankroser. Epidemiologi Ugeskr Læg. In press.
[4] Gad C. Cervical carcinoma in Frederiksborg borough. Dan Med Bull 1976; 23: 86-95.
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[6] Lynge E. Vaginalcytologiske undersøgelser i Danmark. Ugeskr Læg 1982; 144: 124-9.
[7] Berget A, Bock J, Philip J, et al. Rekommandationer for rationel anvendelse af cervixcytologi som forebyggelse mod cervixcancer. Ugeskr Læg 1983; 145: 337-8.
[8] Lynge E. Regional trends in incidence of cervical cancer in Denmark in relation to local smear taking activity. Int J Epidemiol. 1983; 12: 405-13.