CANCER OF THE UTERINE CERVIX

The Need To Screen

APRIL 1986
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INTRODUCTION

CANCER OF THE CERVIX UTERI

THE NEED TO SCREEN

The Directors of Community Care and MOH's (Community Physicians) of the Eastern Health Board, formed a committee to review and report on the subject of cervical screening for cancer of the cervix.

The membership of the committee was as follows:

Chairman - Dr. K.J. Quinn, Director of Community Care & MOH, Area 6.

Dr. M. Hynes, Trainee/Registrar, Area 6.

Dr. L. Murphy, Director of Community Care & MOH, Co. Kildare.

Dr. P.K. Murphy, Director of Community Care & MOH, Area 3.

Dr. B.P. O’Neill, Director of Community Care & MOH, Area 8.

Dr. W. O’Neill, Trainee/Registrar, Area 8.

Dr. M. Peyton, Trainee/Registrar, Area 3.

Dr. C.F. Ward, Director of Community Care & MOH, Co. Wicklow.

At the first meeting the following terms of reference were adopted:

(a) To evaluate the need for and the value of a cervical smear screening programme.

(b) If appropriate, to determine optimum mode of delivery of a cervical screening programme.
It was agreed to deal with the task under the following headings

1. History
2. Epidemiology
3. Current situation in Ireland
4. Literature Review
6. Professional Opinion
7. Discussion
8. Recommendations

I wish to thank the members of the committee for their hard work and co-operation in the preparation of this report. A special word of thanks is due to our Secretary, Dr. W. O'Neill,

Finally, I wish to thank all those who assisted us in various ways in our work.

KEVIN QUINN,
Chairmen,
CHAPTER 1

HISTORY

Working in the Department of Anatomy in the Cornell University Medical School in New York, G.N. Papanicolaou developed a practical test for the early detection of carcinoma of the uterine cervix in 1928. But it was not until 1941 that exfoliative cells in a vaginal smear could be used effectively to screen for cervical cancer and another twenty years were to elapse before the 'PAP' smear test received universal recognition and widespread use.

Since the 1960's cervical cytology has been widely acclaimed as a screening technique for large numbers of women to identify those with suspicious cells for further study. Although screening by cervical cytology has been widely practised for 20 years, it is only recently that convincing evidence of its potential benefit has been published; This comes from a comparison of the trend in the incidence in various Nordic countries which had different intensities of screening, a 60-70% fall in incidence of cervical cancer has occurred in countries such as Iceland and Finland, in which 70% or more of the eligible population have been screened but not in Norway where population screening; has been very limited. There has been no such fall in incidence in Britain where the screening system has failed to reach two-thirds of the women who develop invasive cancer.
Exfoliative cytology in the early 1960's was used increasingly in various centres in Great Britain for the discovery of precancerous conditions of the cervix with the aim of preventing progression in invasive cancer. In the Annual Report of the Chief Medical Officer for the Year 1956 (Department of Health and Social Security) it was stated that good progress continued to be made towards the initial objective of providing a cervical screening service with laboratory capacity to screen all women over 35 years of age at five yearly intervals, up to date, the service does not appear to be achieving its objective, largely because women past their child bearing years, who are at increased risk are not being screened.

In this country a diagnostic screening service for cancer of the cervix was introduced through St. Luke's Hospital, the Galway Regional Hospital and some other centres in the late 1960's. The question of the smear test at that time had been under discussion for some years but a national scheme never materialised; although a cytologist was sought, none was found. An organised population cervical screening programme is still not available in Ireland. However, a fragmented service is available on request, through general practitioners and clinics organised by Health Board, Maternity Hospitals and family Planning Clinics. The service is free to medical card holders who request it from their general practitioner. So far Health Boards have not agreed upon an uniform policy of providing a screening service.
The epidemiology of cancer of the cervix uteri has been much studied since Rigoni - Stern noted its greater incidence among married rather than unmarried women, its peak of mortality in the 55 to 65 age group and its virtual absence among nuns. Keighley, noted its high incidence among prostitutes. Later studies confirmed the importance of sexual factors in the development of cancer of the cervix; it has been noted that mortality trends in the United Kingdom closely paralleled trends in the incidence of sexual transmitted diseases. It has been suggested that the sexual behaviour of the male partner is also an important risk factor.

Mortality from cancer of the cervix is much higher among working close women than amongst other social groups. Repeated epidemiological studies have pointed to the over-riding importance of early sexual experience with multiple partners in the aetiology of cervical cancer. In addition, male sexual promiscuity may contribute to an increased risk in the female.

Cass control studies of cervical cancer patients identify certain attributes related to sexual behaviour that were associated with an increased risk of developing cancer. Among the factors identified, early age at first coitus and multiple sexual partners were associated with the greatest relative risk. These two attributes are interdependent. Having multiple sexual partners is
associated with an increased risk of acquiring venereal diseases, and it has been postulated that cervical cancer is caused by venereally transmitted factors. Indeed some studies have shown that 2.7 times more cervical cancer cases are found to occur among women married to men who had previously been married to women with cervical cancer than wives of men without such a previous marital history.

A number of venereally transmitted agents have been found more commonly among cervical cancer patients than among control women. HSV-2 is a venereally transmitted virus. There is evidence that this virus infection has been found more frequently among women with cervical cancer than among control women. Also, many clinical and laboratory sources have established Human Papilloma Virus as an important factor in genital tract carcinogenesis.

Herity et al have reported on studies of the epidemiology of pre-invasive and invasive carcinoma of the uterine cervix in Ireland. This suggests that the epidemiological factors related to this disease in Ireland are similar to those reported in various international studies. One exception being however, that whereas studies from other countries had shown a higher incidence of the disease amongst city dwellers as compared to rural dwellers in the epidemiological study undertaken by Herity et al, a significant difference in area of residence between cases and
controls in Ireland show that more cases lived in rural areas. It was noted however, that the fact that cases were drawn from a national centre and the controls from hospital which served mainly Dublin and the surrounding counties, may have contributed to this result.

A cervical cancer screening programme is one of the best known areas of prevention, but there are many reservations about its effectiveness. The objective of cervical screening is to find those women whose cervix shows pre-cancer changes (carcinoma - insitu) and for this to be removed by operation as a preventive measure against true cancer. There is controversy because not enough is known about the natural history of cancer of the cervix. Since there are more women with early changes than eventually die from cancer, it is probable that a proportion of insitu changes return to a normal cervix again. Also, it is not known how long insitu changes exist before they progress to full cancer. If, for example, progressive insitu changes exist for only a short time, but are non-progressive for a long time, the likelihood of preventing cancer by screening is small.

Cervical smears were introduced in the late 1940's and their availability became widespread throughout the U.K. by the middle 1950's. Unfortunately, a randomised control trial was not done in the early years when the procedure was being developed and was too scarce to be offered to every woman. Difficulties arise therefore in evaluating cervical cytology because the natural history is not known. The proportion of invasive carcinoma which go through a pre-invasive phase, and the proportion
of cases with these pre-cancerous changes which go on to cancer is unknown. Nor is the incubation period of the condition known, though all the available evidence, which la of necessity indirect, suggests that the pre-invasive changes first occur on average about 20 years before invasive cancer develops. These gaps in our knowledge mean that estimates of the likely effectiveness of the screening procedure cannot be made.

Despite the absence of a control trial, there is a body of evidence suggesting that cervical cytology is beneficial.

One aspect of cervical cytology militates strongly against it being anything like as affective as it might be. While the overall response to an invitation to be screened is about 50 to,6%O6 in the U.K., the response rate falls off sharply with increasing age and with lower social class, and increasing family size. Yet it is the older woman and those in the lower social classes who have the highest mortality from cervical cancer. Women in the population who are at greatest risk of carcinoma of the cervix uteri are therefore least likely to present for screening while those least at risk show the most ready response (Editorial Committee of the Cardiff Cervical Cytology Study, 1980).17

Another aspect of cervical cytology which is of relevance to the ultimate value of screening is the validity of the test. The false/negative rate is believed to be around 20% based on studies of women screened a second time after a short interval. This implies a rather poor sensitivity of the test and has led some to recommend that women aged over 35 years with a first
negative test should be re-screened within a year (Spriggs and Bussis, 1977).\[18\]

An important factor in relation to many cervical smear screening programmes is that a smear is often routine during an internal examination in pregnancy or a family planning consultation and these smears have an extremely low positive yield. It has been suggested that taking smears at young ages train women to use cervical smear screening services in later years. However, smears taken at such clinics are not usually at the request of the woman.

Knox made a computer model to try to test alternative forms of cervical smear services.\[19\] He found that an optimum series of ten tests between the ages of 35 and 80 could perhaps save up to three-quarters of all deaths from cervical cancer. He recommends that the ages for smears should be 35, 40, 44, 48, 51, 54, 59, 66, 73 and 80. This suggests the need for greater emphasis on screening women of older age and to ensure that they return at the best interval. Women admitted to hospital over 35 years of age should be routinely smeared though this is seldom done.
CURRENT SITUATION IN IRELAND

An organised population Cervical Screening Program is not available in Ireland, however a fragmented service is available on request since the late 1960's. This service is free to the General Medical Service sector of the population only. All other women are required to pay a consultation fee. The actual screening kit is provided free as is the laboratory test. However, it would appear that the Inverse Cere Law applies, as those in the high risk group are those who are least likely to avail of the service. The only statistics available refer to the total number of smear taken annually and there is no linkage of date, all this precludes a scientific statistical evaluation of the service and its outcome.


<table>
<thead>
<tr>
<th>Age Groups</th>
<th>Prior to Screening</th>
<th>Screening in Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1961</td>
<td>1971</td>
</tr>
<tr>
<td>25 - 34</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>35 - 44</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>45 - 54</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>55 - 64</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>65 - 74</td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td>75+</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>TOTAL</td>
<td>36</td>
<td>64</td>
</tr>
<tr>
<td>25 ~ 75+</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Overall mortality from Cancer of the Cervix has changed little in the last decade as shown in table 1. This contrasts to the much lower figure of 36 deaths in 1961 prior to screening. Though the increase in mortality between 1961, 1971 and 1981, may be due to a real increase in the disease, it is more likely to be due to better diagnostic methods, more accurate death certification, and longer female life expectancy. Cancer of the cervix seems to have increased steadily in the age groups 45 years onwards since 1971, being particularly high in the 55 - 64 year age group in both 1971 and 1981.

Deaths - Cancer Cervix by Age Group - 1981 - 1964 - Ireland

Table 2.

<table>
<thead>
<tr>
<th>Age Groups</th>
<th>1981</th>
<th>1962</th>
<th>1983</th>
<th>1984 *</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 - 34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35 - 44</td>
<td>7</td>
<td>4</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>45 - 54</td>
<td>12</td>
<td>7</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>55 - 64</td>
<td>20</td>
<td>22</td>
<td>22</td>
<td>13</td>
</tr>
<tr>
<td>65 - 75</td>
<td>9</td>
<td>14</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>75+</td>
<td>13</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>61</td>
<td>57</td>
<td>57</td>
<td>52</td>
</tr>
<tr>
<td>25 - 75+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The mortality figures for the more recent years, 1961 - 1984, table 2 show an increase in cervical cancer in the younger 25 - 34 year age group, which gives cause for concern, a decrease in deaths in those aged 35 - 54, and after an initial increase in the 55 and older age group, there is a small decline in the number of deaths in 1984. However, as these are provisional figures they must be interpreted with caution.

Deaths from Cancer of Cervix 1981 - 1984

Table 3.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Deaths</td>
<td>61</td>
<td>57</td>
<td>57</td>
<td>52</td>
</tr>
<tr>
<td>Cancer of Cervix</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Deaths</td>
<td>42</td>
<td>44</td>
<td>42</td>
<td>39</td>
</tr>
<tr>
<td>Cancer of Cervix 55 years end over</td>
<td>(69.0%)</td>
<td>(77.2%)</td>
<td>(74.0%)</td>
<td>(75.0%)</td>
</tr>
</tbody>
</table>

Table 3 shows that the majority of deaths from cervical cancer occur in the over 55 year and over age group in this country and this figure is slowly declining.
Deaths from Cancer and Cancer of Cervix - Ireland, 1981 - 1984

Table 4.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Deaths Cancer in Women</td>
<td>2,776</td>
<td>2,895</td>
<td>2,923</td>
<td>3,054</td>
</tr>
<tr>
<td>Total Deaths Cancer Cervix</td>
<td>61</td>
<td>57</td>
<td>57</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>(2.2%)</td>
<td>(1.9%)</td>
<td>(1.9%)</td>
<td>(1.7%)</td>
</tr>
</tbody>
</table>

Dept. of Health, 1985,

The number of deaths from Cancer of the Cervix as a percentage of the total deaths from Cancer in women in 1981 to 1984 is shown in table 4. Though the figure is relatively small, 2.2% of deaths in 1981 to 1.7% in 1984, the majority of these deaths could have been avoided if the disease was diagnosed and treated in time. The cervical smear test, which is a simple procedure, offers the opportunity for early diagnosis and so prevention of death often in a relatively young woman.

Incidence of Death from Cancer of Cervix.

Table 5.

<table>
<thead>
<tr>
<th>Year</th>
<th>Incidence per 100,000 female population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974</td>
<td>3.2</td>
</tr>
<tr>
<td>1979</td>
<td>3.6</td>
</tr>
<tr>
<td>1984</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Dept. of Health, Ireland, 1986.

The incidence of death from Cancer of the Cervix has decreased from 3.2/100,000 female population in 1974 to 3.0/100,000 in 1984, as indicated in table 5, again it must be remembered

Table 6.

<table>
<thead>
<tr>
<th>Age Groups</th>
<th>Female Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 - 19</td>
<td>64,040</td>
</tr>
<tr>
<td>20 - 24</td>
<td>141,500</td>
</tr>
<tr>
<td>25 - 29</td>
<td>128,700</td>
</tr>
<tr>
<td>30 - 34</td>
<td>119,500</td>
</tr>
<tr>
<td>35 - 39</td>
<td>106,800</td>
</tr>
<tr>
<td>40 - 44</td>
<td>89,100</td>
</tr>
<tr>
<td>45 - 49</td>
<td>77,400</td>
</tr>
<tr>
<td>50 - 54</td>
<td>73,300</td>
</tr>
<tr>
<td>55 - 59</td>
<td>73,800</td>
</tr>
<tr>
<td>60 - 64</td>
<td>71,900</td>
</tr>
<tr>
<td>65 - 69</td>
<td>67,800</td>
</tr>
<tr>
<td>70+</td>
<td>139,800</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1,153,340</td>
</tr>
</tbody>
</table>

Table 6 shows the target group of women aged 18 years and upwards for which smear testing could be employed if a comprehensive screening programme is in operation.* This was estimated as just over one million in 1984.

The target group of women calculated from the 1961 Census of Population for the Eastern Health Board Region was 392,663 (1981) as shown in table 7.

Table 7,

<table>
<thead>
<tr>
<th>Age Groups</th>
<th>Total Female Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 - 19</td>
<td>12,971</td>
</tr>
<tr>
<td>20 - 24</td>
<td>57,318</td>
</tr>
<tr>
<td>25 - 29</td>
<td>48,640</td>
</tr>
<tr>
<td>30 - 34</td>
<td>43,494</td>
</tr>
<tr>
<td>35 - 39</td>
<td>35,616</td>
</tr>
<tr>
<td>40 - 44</td>
<td>30,627</td>
</tr>
<tr>
<td>45 - 49</td>
<td>27,200</td>
</tr>
<tr>
<td>50 - 54</td>
<td>26,339</td>
</tr>
<tr>
<td>55 - 59</td>
<td>25,295</td>
</tr>
<tr>
<td>60 - 64</td>
<td>22,501</td>
</tr>
<tr>
<td>65 - 69</td>
<td>21,058</td>
</tr>
<tr>
<td>70+</td>
<td>41,624</td>
</tr>
<tr>
<td>TOTAL 18 - 70+</td>
<td>392,683</td>
</tr>
</tbody>
</table>

Hysterectomy Figures,

Table 8.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Hysterectomies Performed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982</td>
<td>2,346</td>
</tr>
</tbody>
</table>

Dept. of Health - H.I.P.E, Data 1986,

The number of hysterectomies performed in 1982, as shown in table 6, was 2,348. Though the Hospital In-Patient Enquiry System only covers about 80% of all hospital discharges, it however gives some indication of the numbers of such operations carried out. These relatively small figures would not distort the target estimated population figures for screening to any great extent.
Number of Smear Tests*

Table 9.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Number of Smear Tests Republic of Ireland</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982</td>
<td>90,000</td>
</tr>
<tr>
<td>1983</td>
<td>100,000</td>
</tr>
<tr>
<td>1984</td>
<td>104,000</td>
</tr>
</tbody>
</table>

Department of Health 1986.

At present about 100,000 smear tests are carried out annually, as shown in table 9. However, with the current administration of the Screening Programme, it is not possible to determine

1. the total number of woman screened.
2. the pathological result of these smears
3. the follow-up of the women with positive smear tests and most important from both an epidemiological and preventive aspect, the incidence and prevalence of Carcinoma of the Cervix in the Irish female population.

DELIVERY OF CERVICAL SCREENING SERVICES

The Irish Cancer Society has been promoting screening for cervical cancer since the 1960's. The Service has developed into three regions - Dublin, Galway and Cork but there is no overall co-ordination between the three centres and services are fragmented.
Here cervical screening is provided by the followings-

(a) General Practitioners
(b) Eastern Health Board - through regular clinics in four Community Cars Areas
(c) Family Planning Clinics
(d) Hospital Gynaecological out-patient departments

Cervical screening testing kits are supplied by St. Luke's in Health Board Areas and these are available for distribution from Community Care Areas 3 and 6.

St. Luke's Hospital is the main laboratory centre for screening in the Republic.

Total number of tests in 1984 - 43,000
Dublin area - 20,584

The number of slides being referred is constantly increasing and there is a waiting list of three months for results.

There are approximately 17 positive smears per 1,000 screened,

**Sources of Referral to St. Luke's Laboratory**

<table>
<thead>
<tr>
<th>Source</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Practitioners</td>
<td>50%</td>
</tr>
<tr>
<td>Family Planning Clinics</td>
<td>25%</td>
</tr>
<tr>
<td>Consultants</td>
<td>5%</td>
</tr>
<tr>
<td>Special Hospital Clinics</td>
<td>10%</td>
</tr>
<tr>
<td>Irish Cancer Society</td>
<td>5 - 10%</td>
</tr>
<tr>
<td>Others</td>
<td>5%</td>
</tr>
<tr>
<td>Other Hospitals</td>
<td>Number of Smear/Year</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Holles Street</td>
<td>10,278</td>
</tr>
<tr>
<td>Coomba</td>
<td>10,250</td>
</tr>
<tr>
<td>Rotunda</td>
<td>5,000</td>
</tr>
<tr>
<td>St. James's</td>
<td>8,000</td>
</tr>
<tr>
<td>Hume Street</td>
<td>New Clinic</td>
</tr>
<tr>
<td>James Connolly Memorial Hospital</td>
<td>700 - 800</td>
</tr>
<tr>
<td>St. Vincent's, Elm Park</td>
<td>1,000/year approx.</td>
</tr>
</tbody>
</table>

The Rotunda carries out antenatal screening on a specific group — with priority given to high parity low socio economic status. The majority of the hospitals accept some slides from general practitioners but say they have to limit this service due to lack of staff resources.

**GALWAY**

Cervical Smear Screening Programme started in 1963. The population catchment consists of Galway, Mayo, Leitrim, Roscommon, Sligo, Clare, Limerick, Tipperary, Wexford, Waterford and Kilkenny. Cervical screening is carried out by a nurse in the local Health Centre, by G.P.'s and by the maternity hospitals. Approximately 27,000 smears are taken each year, 50% of these are from the Galway area and 50% of those attending would have had previous smears. Cervical screening data is computerised and each individual has the same case number for life. There is a waiting list of six weeks for results.

Cervical cancer is on the increase in the West of Ireland. In the 15 - 34 year age group, the percentage rate of all
suspicious and positive findings rose from 14.28% in the 1966 - 1970 period to 54.91% during the period 1981 - 1984. The rate for CIN³+ cervical intra-epithelial neoplasia grade III was 4.3 cases/1,000 in the period 1981 - 1984. More than 30% of CIN³ cases had viral changes. The majority of positive cases were in the 25 - 35 year age group and were of high parity. The rate of abnormal smears is 62.47/1,000 overall.

CORK

In Cork a cervical smear screening programme has been operating since 1979. Last year approximately 10,000 new smears were taken in a catchment area of 160,000 women at risk over the age of 20 years. The rate for CIN³+ is 4.19/1,000 women screened. There has been a 20% per annum increase in the number of smears taken. There is a waiting list of 7 - 10 days for results.

**Cervical intra-epithelial Neoplasia grade III**
CHAPTER 4

LITERATURE REVIEW

The possibility of eradication of cervical cancer by the extensive use of exfoliative cytology has aroused a great deal of discussion since its introduction in 1941 and much has been written on the subject. Epidemiological studies have pointed to the over-riding importance of early sexual experience with multiple partners in the etiology of cervical cancer. In addition, male sexual promiscuity may contribute to an increased risk of cervical cancer in the female. Death rates from carcinoma of the cervix uteri have been low in the Republic of Ireland (3.3/100,000 women in 1982). In a case control study of the epidemiology of preinvasive and invasive carcinoma of the uterine cervix in Ireland, Herity et al noted that behavioural risk factors such as early age at first coitus, marriage and pregnancy and multiple partners were significantly more common in cases.

The Cardiff cervical cytology study ref. showed that for all groups, prevalence was high in lower income class groups, in widowed, divorced and separated women than in married women, and increased with decreasing age at first marriage, and at first pregnancy as previously outlined and also with increasing number of pregnancies. Other studies have implicated papilloma virus, herpes simplex and factors such as smoking (the role of which has not been completely clarified) as contributory. Brown et al further supported the social class differential which was first noted at the beginning of the century and shows no signs of diminishing.
Spriggs and Boddington (1976) maintain that the majority of women with invasive carcinoma of the cervix have not been previously screened and therefore the opportunity for prevention had been missed. Indeed it seems that in Ireland as in England, the inverse care law applies, those in the high risk group are those least likely to avail of cervical screening service. The two major reports on Cervical Screening—the Report of the Committee on Gynaecological Cytology 1980/1981 and the Walton Report 1982, recommend that Cervical Screening should be rigorously promoted amongst the high risk groups.

There are about 4,000 new cases of cervical cancer diagnosed annually in England and Wales, and approximately 2,000 women die of this disease. Draper and Cooke and Parkin et al pointed out that there continues to be evidence of marked cohort effects in the patterns of cervical cancer rates in England and Wales making it difficult to identify the effect of screening.

Evidence suggests that some reduction in mortality in ages over 35 years can be attributed to screening, and particularly between the ages of 35 years and 54 years. The extent of this effect cannot be quantified precisely because of uncertainties concerning the natural history of cervical cancer, differences in risk for different cohorts and the possible effect of other factors.

Despite a long established screening service there has been a marked increase in cervical cancer in the under 35 year age group in England and Wales. This trend has also been reported
from Canada, two Australian States - New South Wales and Queensland, and New Zealand. The mortality in the over 55 age group has continued to increase,

Due to the poor organisation of the cervical screening service in England and Wales it has not been possible to establish an accurate incidence rate.

In countries where total population screening is not provided there appears to be an early period in which screening has no impact because programs are inadequate, a middle period in which adequate programs are effective and a late period in which programs can make no further gains because they do not have sufficient impact on the repeatedly screened women whose initially low level of risk has dropped below a critical paint.

The experience of several countries suggests that very substantial reductions in both incidence and mortality are possible following well-organised programmes of screening e.g. Sweden, Iceland, Denmark, Japan, Canada and in Grampian and Tayside in Scotland. These efficient and effective screening programmes are discussed in more detail in the country review.
Despite the introduction of a national cervical screening scheme to Britain in 1964, there has been little overall reduction in mortality in that country. Deaths in women below the age of 35, though still well below those of older women, have virtually doubled over the last 20 years. There has been some fall in the number of deaths among middle-aged women, but deaths in women over the age of 55 have remained almost unchanged and the majority of deaths occur in this age group. Table 10 shows these trends in mortality for the period 1968 – 1980, and as we can see, this resembles the pattern already described for Cancer of the Cervix in Ireland.

Deaths from Cancer of the Cervix, Uteri, numbers and in (parenthesis) rates per million population. (Sourest QPCS Mortality Surveillance).

Table 10,

<table>
<thead>
<tr>
<th>Year</th>
<th>Age Groups (Years)</th>
<th>Veer</th>
<th>0-24</th>
<th>75-34</th>
<th>35-44</th>
<th>45-54</th>
<th>55-64</th>
<th>65+</th>
<th>All Ages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1968</td>
<td>3</td>
<td>32</td>
<td>32</td>
<td>226</td>
<td>630</td>
<td>618</td>
<td>925</td>
<td>2,434 (98)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(11)</td>
<td>(11)</td>
<td>(76)</td>
<td>(202)</td>
<td>(201)</td>
<td>(242)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1970</td>
<td>5</td>
<td>34</td>
<td>34</td>
<td>170</td>
<td>556</td>
<td>625</td>
<td>943</td>
<td>2,343 (94)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(11)</td>
<td>(11)</td>
<td>(59)</td>
<td>(184)</td>
<td>(203)</td>
<td>(239)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1972</td>
<td>4</td>
<td>46</td>
<td>46</td>
<td>164</td>
<td>510</td>
<td>604</td>
<td>890</td>
<td>2,218 (88)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(IS)</td>
<td>(IS)</td>
<td>(48)</td>
<td>(166)</td>
<td>(120)</td>
<td>(188)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1974</td>
<td>5</td>
<td>50</td>
<td>50</td>
<td>122</td>
<td>443</td>
<td>524</td>
<td>924</td>
<td>2,066 (82)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(15)</td>
<td>(15)</td>
<td>(44)</td>
<td>(141)</td>
<td>(184)</td>
<td>(220)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1976</td>
<td>9</td>
<td>60</td>
<td>60</td>
<td>128</td>
<td>425</td>
<td>669</td>
<td>915</td>
<td>2,206 (88)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(IB)</td>
<td>(IB)</td>
<td>(47)</td>
<td>(1*3)</td>
<td>(230)</td>
<td>(212)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1978</td>
<td>1</td>
<td>93</td>
<td>93</td>
<td>163</td>
<td>358</td>
<td>572</td>
<td>966</td>
<td>2,153 (85)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(27)</td>
<td>(27)</td>
<td>(SB)</td>
<td>(125)</td>
<td>(197)</td>
<td>(219)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1980</td>
<td>10</td>
<td>104</td>
<td>104</td>
<td>161</td>
<td>305</td>
<td>545</td>
<td>943</td>
<td>2,068 (82)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(30)</td>
<td>(30)</td>
<td>(56)</td>
<td>(NO)</td>
<td>(190)</td>
<td>(209)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Estimated total smears (thousands) and in (parenthesis) positive cases per 1,000 smears examined by age group.

Table 11.

<table>
<thead>
<tr>
<th>Year</th>
<th>All Ages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974</td>
<td>2,476</td>
</tr>
<tr>
<td></td>
<td>(4.7)</td>
</tr>
<tr>
<td>1976</td>
<td>2,568</td>
</tr>
<tr>
<td></td>
<td>(5.2)</td>
</tr>
<tr>
<td>1978</td>
<td>2,587</td>
</tr>
<tr>
<td></td>
<td>(6.3)</td>
</tr>
<tr>
<td>1980</td>
<td>2,926</td>
</tr>
<tr>
<td></td>
<td>(6.8)</td>
</tr>
</tbody>
</table>

(Source* National Health Service Central Registrar and Laboratory Returns S.8.H. 140).

43 Table 11 gives an indication of the detection rate of positive smears of the total number of smears taken in 1974, 1976, 1978 and 1980. The number of positive smears has increased steadily between 1974 and 1980.

43 Roberts (Health Trends 1982) showed that there was quite a variation in the detection rate with the source of smear, smears taken in hospitals had a much higher detection rate than smears taken elsewhere.
Registrations of Carcinoma-in-situ of the Cervix in England and Wales.
Rates per 1,000 smears - age groups.

Table 12.

<table>
<thead>
<tr>
<th>Year</th>
<th>Less than 25</th>
<th>25 - 29</th>
<th>30 - '34</th>
<th>35 &amp; Over</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974</td>
<td>0.40</td>
<td>1.31</td>
<td>1.77</td>
<td>1.39</td>
</tr>
<tr>
<td>1976</td>
<td>0.52</td>
<td>1.72</td>
<td>2.10</td>
<td>1.48</td>
</tr>
<tr>
<td>1978</td>
<td>0.53</td>
<td>2.05</td>
<td>2.64</td>
<td>1.43</td>
</tr>
<tr>
<td>1980</td>
<td>0.53</td>
<td>2.20</td>
<td>3.18</td>
<td>1.49</td>
</tr>
</tbody>
</table>

Table 12 shows the increase in registrations of carcinoma-in-situ in England and Wales between 1974 and 1980 and the rates for those less than 25 years has increased from 0.40/1,000 to 0.53/1,000.

It is well recognized that acceptance of cervical screening (in England and Wales) has been greater among younger women and those of higher social class, and women of high risk have not been properly covered by the Cervical Screening Programme. This is thought to be the main reason for the increase in fatal cervical disease among young women.

Cook and Draper (1984) were of the opinion that increasing exposure to sexually transmissible agents resulting from changing patterns of sexual behaviour, the use of non-barrier methods of contraception, the possible direct effects of the contraceptive pill and changes in smoking habits may also have
contributed to the increase of carcinoma-in-situ among younger women. It was pointed out however, that the effects of these factors are difficult to quantify and are controversial.

There were 28 million smears taken from an average population of 16 million women during the period 1968 to 1980 in England and Wales. The numbers of smears taken increased rapidly at first and then more slowly. Currently there are about 3 million smears taken annually. However the number of women screened is unknown, the number of positive smears is thought to be probably greater than the number of women with abnormal cytology, as many of the tests may relate to re-smears done as a check before proceeding to histology. Despite this apparent huge screening cover the total mortality, as shown in Table 10, did not improve accordingly.

It is now felt that the U.K. Screening Programme failed mainly because of administrative problems and not scientific or technical problems.

The administrative problems according to the DHSS Committee Report on Cervical Screening in 1980/81 were:

1. Lack of a co-ordinated mechanism for the development of a screening programme, its management and particularly in the design of the system and its implementation.

2. There was no national system for ensuring that women were individually called for screening.

3. The recall procedure was unsatisfactory in its design.
4. The system was unable to provide information for monitoring purposes.

5. There was lack of continuing research into the natural history of cervical pathology and of error rates.

6. The system was non-computerised and there was no information linkage facilities.

The programme had none of the essential elements necessary for a successful service. Their objectives were stated only in procedural terms (to provide a cytology service) rather than in terms of outcome (to reduce mortality).

7. Because of the bad structure of the system, it was not possible to establish incidence rates. Positive rates were calculated from different numerator - denominator sources. Extraction from the available statistics was not really suitable for a scientific evaluation of the screening service.

The D.H.S.S. therefore revised their policy on Cervical Screening in 1982 due to the unsatisfactory screening programmes in operation at that time.

**SCOTLAND**

A systematic approach to cervical screening was introduced to two areas in Scotland, Grampian and Tayside in the 1960's when a conscious decision was made to screen on an extensive basis. In the Grampian region, women on the lists of General Practitioners were individually invited to attend for Cervical Screening. The response was good and re-screening on a five
yearly basis has subsequently been continued. Smears are also taken routinely at the time of pregnancy and during family planning sessions.

In Tayside the approach was somewhat different. Clinics were established in various parts of the city and women were also contacted, and had smears taken at their place of work. In Scotland, the two areas with established screening programmes have lower death rates from Cervical Cancer than the rest of the country as shown in Table 13.42

Financial stringency has not precluded the coverage of women not in the D.H.S.S. categories. McGregor and Taper (1978) present data on mortality from Cervical Cancer for the years 1968 - 1976.

Table 13 - Age-specific Death Rates *(per million women in each age group) from Carcinoma of the cervix uteri.

Grampian and Tayside Regions and Rest of Scotland.

<table>
<thead>
<tr>
<th>Region</th>
<th>Period</th>
<th>35-54</th>
<th>55-64</th>
<th>65+</th>
<th>All Ages 35+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grampian</td>
<td>2568 - 70</td>
<td>138</td>
<td>286</td>
<td>253</td>
<td>211</td>
</tr>
<tr>
<td></td>
<td>1571 - 73</td>
<td>130</td>
<td>158</td>
<td>209</td>
<td>162</td>
</tr>
<tr>
<td></td>
<td>1974 - 76</td>
<td>107</td>
<td>156</td>
<td>193</td>
<td>146</td>
</tr>
<tr>
<td>Tayside</td>
<td>1968 - 70</td>
<td>148</td>
<td>271</td>
<td>164</td>
<td>183</td>
</tr>
<tr>
<td></td>
<td>1971 - 73</td>
<td>94</td>
<td>202</td>
<td>166</td>
<td>144</td>
</tr>
<tr>
<td></td>
<td>1974 - 76</td>
<td>91</td>
<td>154</td>
<td>238</td>
<td>156</td>
</tr>
<tr>
<td>Rest +</td>
<td>1968 - 70</td>
<td>135</td>
<td>203</td>
<td>237</td>
<td>180</td>
</tr>
<tr>
<td></td>
<td>1971 - 73</td>
<td>107</td>
<td>215</td>
<td>242</td>
<td>172</td>
</tr>
<tr>
<td></td>
<td>1974 - 76</td>
<td>96</td>
<td>237</td>
<td>210</td>
<td>163</td>
</tr>
</tbody>
</table>

* The rates for Grampian and Tayside have less than 100 as the numerator.

+ Scotland excluding Grampian and Tayside.

Table 13 shows age specific death rates in the two regions of Scotland, Grampian and Tayside with comprehensive screening programmes.
The fall in death rate for women aged 35 - 54 in Tayside was from 148 per million in 1968 - 1970, to 91 per million in 1974 - 1976. The figures for the age group 55 - 64 show decreases in death rates both in Grampian and Tayside but an increase in the rest of Scotland. The figures for those aged over 65 were very unsatisfactory, with only Grampian showing a decrease, and the rest of Scotland's a very small increase, while Tayside showed an increase.

The last column in Table 13, all women aged over 35 years, showed that mortality from cancer of the cervix is lower in the two regions committed to screening than in the other parts of Scotland. The pattern in the rest of Scotland is similar to that already described for England and Wales. Though the figures shown are based on small numbers and must be treated with caution, the results are nevertheless encouraging.

McGregor and Taper, \cite{1} Researchers in Aberdeen, Lancet 1978 (2) are also of the opinion that even when the first atypical smear is seen before the age of 20, there is still a considerable period before the micro-invasive stage is reached. McGregor and Taper, Lancet 1978 (1) further highlighted the trend towards smaller families, and an increase in sterilisation, which indeed is also the case here in Ireland, which means that contact with obstetric and family planning services will be possibly lost leaving a very high group of women without screening.
There has been a substantial downward trend in mortality in Japan. In 1955 the mortality rate from cervical cancer was 16/100,000. With the introduction of cervical screening programmes in the early 1960's, however, they steadily gained popularity throughout the country and there has been a reduction in mortality to 10.7/100,000 in 1975.

Three screening programmes are currently in use:

a) A mobile programme provides a car staffed by one or two gynaecologists and paramedical staff to visit target areas.

b) A detection centre programme provides a screening service at a cancer detection centre.

c) A private physician programme in which subjects visit gynaecologists licenced by the Japan Association for Maternal Welfare in the community.

The fee for initial screening and re-screening of each programme is subsidized by the local government. In Japan the three programmes enjoy more or less equal popularity, the mobile programme being a representative type in rural areas and the other two more common in urban areas. These programmes cover all women of 30 years and older. The total number of women screened and re-screened in each programme is notified and it has been possible to do a cost benefit analysis and screening efficiency on each programme.
Due to obvious geographic constraints, the mobile programs has been acceptable in rural areas of the country where it is not feasible to screen a large number of subjects at one location.
Various factors appear to influence the behavioural pattern of people. City people with their relatively high educational background and easy access to physicians tend to seek medical advice either from the private physicians in the neighbourhood or from specialists at the detection centres. They are ready to pay the cost for promoting their own health. Working women have been reported to participate in screening programmes more actively than unemployed housewives because of group health insurance and annual check-ups at the work place. Better participation rates were observed in the relatively younger age group between 35 and 54.

The detection centre has highly trained physicians and para-medical staff with up to date equipment along with a high level of diagnostic competency. Colposcopy is routinely employed for screening only at the detection centre.

**CANADA**

Canada has developed a system of cervical screening where within many provinces the Health Care Insurance Scheme provides sufficient identification information on all women to permit an organised approach to screening. Women are invited to attend for screening whether they have already entered the programme or not. Many of the provinces have cancer registers. Fidler et al 1968, the British Columbia Group and later Kinlen & Doll 1973 have argued that the fall in both incidence and mortality from cancer of the cervix is due to cervical screening in British Columbia.
Miller and his colleagues in 1976, following a study of results of screening in ten provinces between 1960 - 1972, concluded that there was evidence of an important and significant contribution of the intensity of screening to the fall in death rates from cancer of the uterus between 1960 - 1972. Reductions in mortality of around 20 - 40% occurred in the age group 30 - 64 following screening programmes which covered about 20.0% of the female population (Miller et al). The incidence rate for Carcinoma of the Cervix in Canada is about 15.1/100,000 (Clarke & Hilditch 1983).


The Canadian Task Force on Cervical Cancer Screening Programmes which was set up in 1973, produced its 1st report (Walton Report) in 1976 reconvened in 1980 to update its previous recommendations. The reports, 1976 and 1980, are considered to be very important as Canada is one of the pioneers in the area of Cervical Screening, British Columbia Province having commenced screening as early as 1949. Much of the early epidemiological information concerning cervical cancer was as a result of work done on data collected and studied in British Columbia, and important research in this field continues to be done there. Therefore, the 1982 report will be described in some detail.

EPIDEMIOLOGIC CONSIDERATIONS:

Squamous cell carcinoma of the cervix is recognised as almost always to occur in women who have been sexually active. The most important risk factors are early age of first intercourse and multiple sexual partners, also the role of the high risk
male in the transmission of an etiologic agent to his partner is emphasised.

It is also suggested that infection with Herpes Simplex Type 2 may lead to a premalignant change in the cervical epithelial cells in a large majority of cases. It was pointed out that some recent studies suggested that cigarette smoking may play an etiologic role.  

**NATURAL HISTORY**

Though the natural history of carcinoma-in-situ is thought to be long — up to fifteen years, new data from the British Columbia Cohort Study (Boyes et al 1982), indicated that sometimes carcinoma-in-situ, especially in younger women regresses, also that greater number of cases may be rapidly progressive, again especially in younger women.

**Efficacy of Screening Programmes**

The Task Force reported that the rate of fall in the incidence of cervical cancer has slowed at least in women under 65 years. Further, a case-control retrospective study in Ontario supported the effectiveness of the Screening Programmes. In this study, failure to participate in a Screening Programme was examined as a potential risk factor for invasive cancer, (E. Clarke, T. Anderson 1979). Examination of trends in mortality statistics between 1957 and 1979 in Canada led the Task Force Committee to conclude that squamous cell carcinoma of the cervix can be controlled by means of a cytologic screening programme for the following reasons:—
1. Invasive squamous cell carcinoma is preceded by a spectrum of disease extending over many years, and may be recognised at the stages of dysplasia and carcinoma-in-situ.

2. In a significant proportion of patients with severe dysplasia or carcinoma-in-situ the disease, if untreated, will develop into invasive squamous cell carcinoma.

3. Cytologic evidence of dysplasia and carcinoma-in-situ can be easily, safely and economically obtained by the preparation and examination of smears.

4. Once dysplasia or carcinoma-in-situ has been identified, further progress of the disease can be prevented by simple therapeutic procedures and continuing surveillance.

Groups at Risk

On the basis of epidemiologic and sociologic evidence two groups were identified -

1. Those not at risk, i.e. (a) those who have never had sexual intercourse,
(b) those over 60 years with previous negative smears,
(c) those who have had a hysterectomy for previous benign disease.

2. Those at risk includes all other women.
A sub-group of high risk women were identified as women who had sexual intercourse at an early age and women who had multiple sexual partners; or women whose sexual partners had multiple partners. It was also felt that screening should be carried out on women attending clinics for sexually transmitted diseases and on those admitted to penal institutions.

**Recommended Screening Schedules**

It was recognised that internationally there are many variations in screening schedules, however the task force report recommended screening as follows:

- annually for those who are sexually active from 18 years to 35 years and thereafter every 5 years until age 60, provided the smears were without atypia.

- women at risk who have never had a cervical cytology examination should be encouraged to be screened.

It was felt that to function efficiently within a mass screening programme a laboratory should process a sufficient number of cases (around 25,000) annually to require staffing by a minimum of three qualified and experienced cytotechnologists, supervised by a cytopathologist and with adequate clerical and support staff.

Uniform terminology should be used for reporting smears and biopsies and for recording data in cancer registries so as to assist in the exchange of information from one laboratory to another.
All mass screening programmes should have follow-up systems to ensure that:

1. People with normal tests are recalled at regular intervals for repeat testing according to the guidelines of the programme.

2. Action is taken following the discovery of an abnormality, long term follow-up is provided for patients who have received treatment following the diagnosis of an abnormality.

Such a system was seen to be only possible through a central registry, also provincial registries should be established which would be linked with the central registry and a computerised data processing system should be developed to allow for inter-provincial communication and comparisons.

It was also recommended that primary care physicians should set up reminder mechanisms for their female patients who fail to return for a smear test. Concerning quality of smears, an adequate smear is considered to be one which is a direct circumferential cervical sample.

A standard nomenclature was recommended to be employed for reporting the results of cervical cytology examinations and this nomenclature is included in the 1982 report.
UNITED STATES

There is no overall national cervical screening programme in the United States. Individual States decide their own role on cervical screening.

In 1974 Cramer examined the role of cervical cytology in the declining morbidity of cervical cancer. From the early 1950’s to the late 1960’s there has been a 35% - 60% decrease in the incidence of invasive cancer. Data prior to 1960 is not available so it is possible that some decrease in incidence may have occurred prior to this time. Fidler and Boysen found that the incidence in females over 19 years in their unscreened population 29 cases/100,000 was close to the precytology level in 1955 whereas the rate in the screened population was about one sixth (4.5 cases/100,000).

However taking other variables into consideration e.g. better health care and improved socio economic conditions cytology is still considered to be the principal factor.

ICELAND

Mass screening in this country started in 1964. More that 85% of women in the age group 25 - 59 have been screened at least once. The current policy is to carry out cervical screening on every woman under 70 years once every 2 - 3 years. Mortality from cervical cancer was increasing in Iceland unlike other countries prior to the introduction of mass screening and continued to rise during the first few
years of cervical screening. Since 1970, however, a more than two-fold reduction in mortality has been observed among women aged 25–59. There has been a similar decrease in incidence of tumours of stages I, II, and III, and in the first five years after a negative smear the incidence of these tumour stages is almost zero. Both deaths and advanced tumours are largely confined to women who have never been screened.

All histological examinations are done at the same department of Pathology, the only one in the country. The treatment of all patients with cervical cancer is now centralised in the unique gynaecological department in Reykjavik. The person in charge of treatment of gynaecological cancer at this clinic is also the head of the screening centre in Reykjavik. This ensures close co-operation between the screening centre and the sector in charge of treatment and follow-up of gynaecological cancer. All data on cervical screening programmes is stored at the Cancer Society Centre in Reykjavik. Also a protocol has been made on every registered case of cervical cancer in Iceland since 1955.

Iceland has several advantages for assessing the effect of screening. Due to isolation for centuries and the unattractive climate the population of Iceland has been stable with minimal immigration of foreigners. Emigration is also quite small. The existence and use of a personal identity number and the
small size of the population make the linkage of repeat
visits to the clinic by the same woman particularly easy.
Lists of women who have never attended the clinic are regularly
produced by matching the detection chain file against the
national register. So for each year of operation the
population of screened and of re-screened women is known with
precision. It is claimed that the fall in overall mortality is
due to the fall in the number of unscreened women.

FINLAND

Mass screening for the detection of cervical cancer was
introduced to Finland in the early 1960's by the Cancer Society
of Finland which founded 11 Cytology Laboratories in different
parts of the country. A nationwide mass screening registry
was established in 1968, by the Finnish Cancer Registry. There
is also a National Population Register.

An organised mass screening programme now covers (with few
exceptions) all women between the ages of 30 and 55, every
fifth year. Names of those eligible to be screened are taken
from the National Population Registry and the women are invited
by a personal letter. The registers are computerised which
allows for an organised call/recall system and also information
linkages. The central feedback system makes it possible also to
identify high risk women or groups of women. They can be
identified by demographic variables from the National Population
Registry or by variables recorded at previous screening.
350 new cases of cervical cancer are diagnosed annually giving an incidence of 14.3 per 100,000 (adjusted) population. (1976). Selective screening was later considered as a method to reduce costs and to increase the yield of pre-invasive lesions. However it was decided that if people were selected according to their high risk factors, as recorded in the National Population Registry, the screening would be ineffective as many cases of invasive cancer were found in the low risk group. High risk factors were determined from data on symptoms and from previous cytological diagnosis.

Between 1963 and 1970 mortality and morbidity from cervical cancer decreased in the age groups covered by the screening. Hakama, an eminent researcher in this field, estimated that with the continuance of the mass screening programme, a reduction of 58% could be expected in the risk of cervical cancer in the female population aged 30 - 59 years in Finland, a prediction which has since been verified by the observed trends in Cervical Cancer in Finland.

DENMARK

Cervical Cancer is a more frequent disease in Denmark than in most European countries. However, there has been a decline in both incidence and mortality, since the late 1960's. The incidence decreased from 31.7/100,000 women in 1963-67 to 22.3/100,000 women in 1973 - 77. Studies show that this decrease is related in time to the initiation of organised screening programmes, which commenced in 1963. Organised programmes are now running in 9 areas, and in 1980, some 40%
of women were covered by these programmes. However, in the same year 550,000 cervical smears were taken - sufficient to cover the whole female population - therefore a large number of smears were taken outside the organised programme. The decision concerning the initiation of an organised programme is left to the individual countries as there is no governmental guideline for the screening activity.

An evaluation study comparing incidence of cervical cancer in areas with and without the organised screening service was done in 1983, and it was shown that a considerable decline in the cumulative incidence of cervical cancer had occurred in women aged 30 - 59 in areas with organised screening programmes commenced before 1969. The decline in areas without organised programmes but with a higher or equivalent screening activity in 1974/75 was in general smaller or occurred later. In half the areas with a lower level of smear taking activity in 1974/75 only minor reductions in the incidence of cervical cancer were observed.

Hysterectomy (which is at a level of 20% for women aged 60 years) could not explain the decline in incidence for women below the age of 60 years.

**SWEDEN**

Sweden has a good cervical screening programme. The incidence of cervical carcinoma in Sweden was 21 per 100,000 women in 1960 when smear screening began common in the country. The incidence was largely unaltered for about ten years but has slowly decreased during the last ten years to about 15
per 100,000 at present. Since the 17th century, this country has a population register whereby it is possible to follow up the entire population during their lifetime. In most Swedish counties, every papanicolaou smear taken has been computer recorded since 1971 and linked on an individual level to a cancer registry.

One study by Stenkvist et al. (J.A.M.A. 1984) showed that 90% of the total female population, aged between 30 and 70+ in three Swedish counties were screened for cervical cancer over a ten year period. There were 207,445 women followed up for ten years. No woman was lost to follow-up. There was a 75% decrease in invasive cervical cancer incidence among women who had smears taken at least once during the ten year period. Among those women who had never had smears taken, the incidence of invasive cervical cancer was four times as great as among those women who had been examined at least once.

These researchers estimated that the system proposed by the Swedish Medical Board - at least one smear every three years, for cervical cancer screening, could reduce the incidence of invasive cervical cancer to a level between one and five cases per 100,000 women per year in a completely screened population.
In the United Kingdom, a Working Party submitted a report to the Department of Health and Social Security in 1981 relating to the age and frequency of cervical cytology.\textsuperscript{32}

Having regard to certain similarities that exist in the United Kingdom and Republic of Ireland in relation to health matters, the Committee of Community Physicians considered it appropriate to mention in some detail the rationales and recommendations of the United Kingdom Working Party.

In the introduction, that Working Party noted "in some countries and regions, screening appears to have brought about a considerable decrease in mortality from cervical cancers. In Britain this effort has not, in general, been observed, in spite of an extensive screening programme. In younger women there has, in fact, been an increase in mortality from the disease although the actual numbers involved are very small."

The report notes that when compared with performance of services in some other countries, and with computed expectations in the United Kingdom, the screening service must be regarded as a relative failure. The Working Party was of the view that the fundamental reason for this was a lack of a co-ordinated mechanism for the development and management of a screening service, through which it might
respond sensitively and promptly to a continuous assessment of its own performance.

Major causes of the failure were identified as—

1. The lack of any national system for ensuring that women are individually called for screening.

2. The unsatisfactory design of the recall procedure.

3. The inadequacy of information systems relating to screening and inability to provide information for monitoring.

It was noted that the provision of facilities for actually examining cervical smears had been generally successful. That approximately 2.7 million smears were examined each year (early 1980's) and that all regions were reasonably well covered. In addition, the Working Party drew attention to the fact that had the level of effort then in operation been equally distributed over the whole population, then every woman in the age group 20 to 74 could have been screened once, and many of them twice, over the preceding 12 years. It was found that quality control was unsystematic though even accepting the generally assumed false/negative error rate of around 20% the efficiency of the service would not be critically affected, provided steps were taken to ensure that each woman had at least 2 examinations.

The report noted that it was possible to extract from the available records statistics which would be necessary for a proper evaluation of the performance of the cervical smear
screening service. It was estimated that the rate of "positive" smears, i.e. those sufficiently abnormal to require histology, was round 5 per 1,000 up to 1973 but increased to 6.3 per 1,000 by 1979. The report notes that the proportion of positive smears at ages 25/29 and 30/34 have been nearly as high as those for ages 35+ and recently, unlike the rates for the older age group, have shown an apparent increase of around 70% over a period of 4 years. It was noted with regret that there was a good deal of uncertainty concerning these figures and their interpretations. For instance, the number of women screened was unknown. Many of the smears were taken from women who had at least one and perhaps two previous smears. There was a probability that the number of positive smears was greater than the number of women with abnormal cytology due to the fact that many of the positive reports might relate to repeat smears done as a check before proceeding to histology. All factors relating to an inadequate information system.

Although, in the United Kingdom, 20 million cervical smears were taken from a population of approximately 17 million women during a 10 year period, the total mortality from cervical cancer decreased only moderately between 1968 when there were 2,434 deaths, and 1979 when there were 2,087 deaths. Nearly all the decrease in mortality occurred in the age groups 35/44 and 45/54 though the rates in the former group were decreasing before screening started and have very recently shown an increase. The rates would have been affected by the changing frequency of hysterectomy. The mortality rate in the age group
25/34 more than doubled, from 11 per million in 1968 to 27 per million in 1978 and the Working Party noted that this fact had been partly responsible for the questioning of policy relating to cervical cytology. While noting that this is a cause of concern, it is stressed that in the United Kingdom, fewer than 100 deaths per year from cervical cancer occur at ages below 35, and that this represents less than 5% of the deaths from cancer of the cervix.

Noting that there has only been a minor reduction in mortality from invasive cervical cancer despite the availability of a cervical smear screening service the Working Party felt that this failure of the screening programme in the United Kingdom had to be contrasted both with the theoretically achievable results of a screening scheme and with the results achieved in some other countries. It was felt that there was at least 3, not mutually exclusive, possible explanations for the failure in the United Kingdom:

a) screening may be concentrated among women who are at low risk of dying from cervical cancer

b) there may have been an increase in the risk of carcinoma in situ/invasive cervical cancer among young women and the screening programme has succeeded in limiting the magnitude of this increase

c) as there is uncertainty concerning the nature of the relationship between invasive cancer and lesions detectable by screening, some insitu cases may never progress to invasive cancer, and some invasive cancers may have no, or only a very short, detectable preinvasive phase.
the latter explanation does not account for differences in results between the United Kingdom and other countries.

In relation to the suggestion that screening may have been concentrated among women who have been at low risk - the group defined these as:

1) those of higher social class

2) those who are young (approx. 55% of smears are taken from women under 35 years of age. It is not known how the remaining 45% of smear tests are distributed amongst the older age group, but many older women were certainly never screened).

3) the women availing of cervical smear testing are being frequently tested.

The Working Party drew attention to the fact that if screening was being concentrated among women who were at low risk, it was difficult to explain the high rate of positive smears.

The Report drew attention to the fact that there was now considerable body of evidence from other countries that properly organised screening had been followed by a reduction in mortality from cervical cancers. Millar et al (1976) reported on the situation in Canada and it would appear from the data that reductions in mortality of around 30% to 40% occurred in age group 30/64 years following a screening programme which covered around 20% of all of the population over the age of 20, every year. It was concluded that the results suggested that substantial saving of life could be achieved from screening.
From the United States, Cramer (1974) showed that similar falls in mortality had occurred in that country and that these were again related to the level of screening. Timonen et al (1974) and Hekama & Rasanen-Virtanen (1976) reported on the situation in Finland where mortality and morbidity from cervical cancer decreased especially in the age groups covered by the screening programme. In that country women were individually called for screening and according to the latter paper there was a 92% response. In Iceland, over 65% of women under the age of 75 years had been screened at least twice by 1977. Mortality fell by 60% between 1959/70 and 1975/78 (Johannesson et al 1978 and 1980). The decrease appears to have occurred in all age groups. Similarly in the Grampian Region of Scotland (MacGregor and Taper, 1978) there has been a fall in mortality in all age groups following an intensive programme of cervical smear screening. In that region of Scotland, the programme started in the early 1960's and women were individually invited to attend for cervical smear. As in the Finnish programme, major effort was directed at older women and a high proportion of women aged over 40 years were screened. Re-screening has taken place at 5 yearly intervals.

It was noted that in the U.K. there were 3 broadly defined sets of circumstances of which cervical cytology was undertaken:

1) scheduled population screening (the main preventive programme) for all women in specific age groups.

2) ad-hoc screening of sexually active women attending clinics where it is convenient to take a smear in the course of consultation for other purposes (family planning, antenatal).
3) diagnostic investigations relating to the presence of specific symptoms.

The report noted that there is still considerable uncertainty about the natural history of carcinoma in-situ and invasive cervical cancer, and to formulate an optimum screening policy one would need much greater knowledge of the natural history of the disease than is at present available. Such knowledge can only be obtained by further research, and attention was drawn to the fact that any policy suggested at present could to some extent only be regarded as provisional. In putting forward recommendations the Committee assumed that few cases of preinvasive cancer progress from onset to invasive disease in less than 5 years.

It was emphasised that many women remain ignorant of the fact that they have had a screening test done, and negative results are not usually reported to patients. It was the view of the Working Group that such arrangements apart from raising ethical questions impeded the operation of effective scheduling systems. In addition, it was noted that communications with clinicians regarding the rationale behind national policy seemed to have been unsuccessful.

It was felt that the failure to reduce mortality in the United Kingdom had occurred not because the current policy relating to cervical smears was wrong but because it had not been implemented.

It was noted that a large proportion of women had never been screened and those most at risk were least likely to be screened.
In formulating recommendations, the Group took into account the fact that the majority of deaths occurred in older women and that even one cytological examination, preferably around the age of 35/40 years, appeared to offer a considerable degree of protection.

The U.K. Working Group's recommendations included the following:

1. In the short term there should be an immediate publicity campaign designed to ensure that all women aged 35 or more who have never been screened should have a cervical test done.

2. The longer term policy should be based on a programme of population screening with a scheduling system concentrating on all women over 35 years of age.

3. Smears should be taken every 5 years.

4. For women with at least 2 recent negative smears, and who have never had a positive or doubtful result, screening should cease after age 65.

5. Health regions and districts should be encouraged to develop their own schemes of repeated call and recall, based wherever possible on computer systems.

6. Such schemes should use local population registers of women to ensure that all women are called for screening at 5 yearly intervals between the ages of 35 to 65.
7. To avoid confusion as to when to call people for screening, it is recommended that such screening is done at specific ages - 35, 40, 45, 50, 55, 60, 65.

8. National guidelines and technical standards should be established for local screening schemes.

In relation to the screening of women under 35 years of age, the Working Group noted that a large proportion of such women attend family planning or antenatal clinics and that this presents an opportunity for such women to be screened without any necessity for special scheduling arrangements to be made. It was felt that while the main population screening effort should be concentrated on the older age groups, a limited number of smears should be obtained from women attending at family planning and antenatal clinics, since the Committee noted there was some evidence that cervical cancer is becoming more frequent in younger women and the groups considered at higher than average risk.

Concerning cervical smear screening at such clinics, it was recommended that:

a) a smear be taken early in the course of care for each pregnancy.

b) all women attending for family planning advice and who have not previously been screened, should have a first smear at age 22 or at the next visit after that age.

c) for women attending these clinics a further smear should be taken at around age 30 if 5 years or more had elapsed since the previous smear test.
In addition, it was recommended that any woman aged between 22 and 35 years of age who was or had been sexually active should be screened on one occasion if she requested a test. It was noted that the policy of taking smears for groups of women thought to be at specially high risk is a useful one. Such groups were seen as including women gynaecological or sexually transmitted disease clinics.

Finally, it was recommended that the Department of Health and Social Security establish a Research and Development Programme to develop an integrated and effective cervical smear screening programme. The research programme would involve the initiation of pilot trials for recall of women for screening, the development of a monitoring programme to investigate the effectiveness of different methods of calling and recalling women for screening and the cost benefits. The ultimate objective would be to bring down the death rate from cervical cancer in England and Wales to levels similar to those achieved by other countries that had adopted a more vigorous and co-ordinated approach to cervical cancer screening.

Having reviewed in considerable detail the findings of the United Kingdom Working Party on the topic, the Committee consider it appropriate to draw attention to a matter of concern relating to cervical smear testing that came to the notice of the public in the U.K. late in 1984. About this time there were several reports of women with a positive cervical smear test not being adequately followed up due to administrative or other mishaps. In any system for smear testing, it is essential to ensure that all cases with a positive or suspicious smear test should be followed up and adequately dealt with.
CHAPTER 6

PROFESSIONAL OPINION

Views of Obstetricians and Gynaecologists

The views of a cross-section of consultant obstetricians and gynaecologists from the four Dublin Maternity Hospitals were obtained. Information was sought on the current state of cervical screening in Ireland and suggestions as to how it might be improved were also elicited.

The first opinion was as follows:

In this hospital a screening service is offered in ante-natal and gynaecology clinics to a selective group of women considered to be at high risk, i.e. those in the lower socio-economic groups and those of high parity. There are insufficient staff to screen all patients attending the hospital. No post-natal screening is done and only a limited service is provided for General Practitioners. In 1985, 5,000 smears were examined.

Cervical screening is very important and every woman should be screened from the start of sexual activity. A co-ordinated service should be established for the North side of the city and it is hoped to hold meetings with the relevant hospitals to discuss this. A gynaecological unit with colposcopy facilities is the ideal centre for co-ordinating the service. Concern was expressed at the delay in getting a test result from some centres at present. The more effective the service the more efficient it becomes.
Second opinion:

In this hospital cervical screening is carried out on all pregnant women either in the ante-natal or post-natal period. All those attending Gynaecology Clinics are routinely screened.

The view was expressed that while screening is worthwhile in the individual patient the value of screening to the community is seriously compromised by failure in bringing it to those most at risk of disease. Too many unnecessary smear tests are being carried out at present on low risk women. The poor standardization of the test is also cause for concern, and those providing the service require further training.

Cervical screening as it operates in Ireland is not cost effective. In the opinion of this specialist a well-organised programme should be introduced with screening as follows:

1. All women who attend an agency for family planning purposes.
2. All pregnant women who attend for ante-natal care.
3. All women aged 25 years should have two smear tests, one year apart. If both are negative .............
4. Regular screening at 3 year intervals until age 45 years.
5. Regular screening at 5 year intervals thereafter.

This screening schedule could only be applied to an Irish population taking sexual mores and present mortality statistics into consideration.
It is unnecessary to attend a hospital out-patient department for cervical screening. This service can be provided in the community by General Practitioners, Community Care Doctors or Public Health Nurses. It may be necessary to provide a mobile unit or domiciliary service in order to reach high-risk women who do not attend for screening.

Third Opinion

In this hospital, cervical screening is performed at post-natal clinics, gynaecology clinics and special screening clinics. These total in excess of 10,000 smears annually.

The current situation with regard to cervical screening in Ireland is haphazard, and while it may benefit the individual, it does nothing for the community. This is in contrast with other countries where there has been a significant decrease in mortality.

The optimum mode of delivery of cervical screening should include putting one named person in charge of reducing the incidence of, and mortality from cervical cancer. This person would then be responsible for achieving the results.

Computerization of the scheme should be feasible.

Cost-effectiveness cannot really be measured, but this is a cancer where true prevention can be achieved.
Fourth Opinions

At present cervical screening is offered to all post-natal patients in this hospital and patients presenting with gynaecological problems. Approximately 80% of patients return for the post-natal examination. An open screening clinic is held once weekly, to which women may come without referral. A laboratory service is also provided for a small number of general practitioners. In all, over 10,000 smears are processed annually in the hospital laboratory with results available in 3 days. A colposcopy clinic follows up patients with abnormalities on screening.

Women should be screened once sexually active and thereafter until age 55. If an initial two smears, one year apart, are normal, a three year interval between further screening examinations is adequate. However, if the number of smears taken is increased, laboratory services will have to be developed also, as the long delays in getting results from some laboratories at present are unsatisfactory.

The present screening service is not reaching many women at risk of cervical cancer. There should be widespread publicity to advertise the benefits and availability of cervical screening and General Practitioners should be encouraged to take smears. Mobile clinics could be used to reach women in women’s clubs and in the workplace. An in-hospital service to patients in general hospital would reach women who might not otherwise be screened, but extra staff would be required to provide such a service. While Public
Health Nurses could be trained to perform cervical screening, it may not be realistic to expect them to make cervical screening a priority in view of their present workload.

Fifth Opinion:

The major problem with cervical screening in this country is that the service is not reaching those who need it most, i.e., women who become sexually active young, those of high parity, and women in the lower socio-economic groups. At present it is women in the upper segment who are being screened most frequently.

There are still gaps in our knowledge of the natural history of cervical cancer. The interval between development of abnormalities in cervical cytology and subsequent invasive cancer is unknown, as is the proportion of invasive cancers which go through a pre-invasive phase. Invasive cancer of the cervix is now being seen in women in their late twenties and there is some evidence that it is a more aggressive disease in younger women. Because of these factors there is uncertainty as to the value of cervical screening. However, in the light of present knowledge women should be strongly encouraged to have regular cervical smear testing. The suggested schedule is two initial smears one year apart at age 25, with subsequent examinations at 3 yearly intervals until age 60, provided cytology remains normal.

In this hospital cervical screening is carried out postnatally. However, many women do not return for the postnatal visit. There are therefore, strong arguments for taking a cervical
smear at the first ante-natal visit, as the majority of women have antenatal care.

General Practitioners are in a good position to screen those most at risk and GMS lists could be used to identify this group. Public Health Nurses could be trained to perform screening and they have the advantage of having access to the home. Women in the 50 - 60 year age group are a particularly difficult group to reach as they are especially reluctant to submit to vaginal examination. Screening should continue at Family Planning Clinics and Sexually Transmitted Disease Clinics.

Procedures must be set down to deal with abnormal smear reports. In this hospital smears are processed in the hospital laboratory and results are available within 3 days. There is a colposcopy clinic in the hospital for follow-up, which is very busy. If the workload increased additional cytology technicians would have to be employed and colposcopy facilities extended to maintain the service.

Sixth Opinion:

While many people are providing a cervical screening service, the effect in terms of mortality reduction is not known. There has been a general increase in the incidence of abnormal smear tests, with a doubling of the incidence in this hospital.

The service provided by St. Luke's Hospital is slow and remote from the patient. There should be a pilot programme of
intensive screening in an area with slides being referred
to a centre with a special interest in cervical smear
testing*

Notifications of deaths from cervical cancer are not accurate
and the true figure is higher. As the background incidence
of the disease is unknown, the cost effectiveness of a
screening programme cannot be computed,
Four General Practitioners were asked for their views on the current situation and how it might be improved.

The first opinion was as follows:

This doctor practices in a two-man inner city practice. Cervical screening is offered, but few patients avail of it, and it is necessary to maintain a continuous promotion of the service. Some time ago it was felt that a concentrated drive for cervical screening was needed in the practice, and with the help of the Irish Cancer Society, the services of a nurse were provided on Saturday mornings for screening purposes in the surgery. This did not prove successful and the service was discontinued after some time.

Smear testing is advised at the onset of sexual activity and every two years thereafter, until age 60 years. At present there is a long interval before results are available from the laboratory and this needs to be improved.

Many women are not aware of either the importance of the test or the relative simplicity with which it can be carried out. A national promotional campaign should be undertaken to rectify this. The General Practitioner is the main person who should provide a cervical screening service. Alternatively it could be provided by a nurse trained by the Irish Cancer Society. It would be acceptable for a patient to attend for cervical screening provided by the Irish Cancer Society in
another General Practitioner's surgery. The patient would then continue to attend her own doctor for any other problems. Attendance by patients at a Family Planning Service breaks the continuity of care of the General Practitioner.

The present screening service was not considered to be cost effective.

Second Opinion:

This Practitioner works in South Dublin and promotes cervical screening among patients in the practice. Those who default on re-screening are reminded that another test is due. All sexually active women are advised to undergo screening, initially at age 20 - 21 years, and subsequently at 18 months - 2 year intervals until the end of sexual activity.

Cervical screening is very valuable in the prevention of cervical cancer, particularly when, as in the case of the laboratory used by the practice, results are available within 10 - 14 days. However, the service at present requires better planning on a national basis.

The service should be provided mainly by General Practitioners. Where this is not available then Community Health Doctors should provide the service - along the lines of the Immunisation Programme. The General Practitioner should be the principal person involved in getting cervical screening to high risk women. Their ability to do this would be enhanced by computerization of their medical data. The
Eastern Health Board could help with computer installation. Alternatively, the payment of a reasonable fee with a requirement to make returns to the Eastern Health Board on all cervical smears carried out, might increase the incentive of individual General Practitioners.

Third Opinion:

In this North City practice no cervical screening examinations are performed, but patients are referred to a hospital of their choice for the test. All patients from their twenties up to age 50 - 60 years are encouraged to attend for screening, but older women may refuse. In the past screening was done in the practice, but difficulties with inadequate specimens were encountered.

Screening is worthwhile, and the current arrangement is satisfactory with reports taking from three weeks upwards to come back. There is a worry that a report might not come back, and that a patient with an abnormality might not get the necessary follow-up. Laboratories should label reports that need action, in order to draw attention to them.

Patients in the lower socio-economic groups rarely attend even when ill themselves. When they do attend, they are encouraged to have cervical screening but often do not act on a letter of referral. The Public Health Nurse may be the best person to get services to this group.
Fourth Opinion:

Cervical screening is a very important service. General Practitioners are able and willing to provide this service and they are the best people to deliver it on the ground. In particular they see post-menopausal women and are in an ideal situation to encourage cervical screening.

Two aspects of the current situation are unsatisfactory —

(1) Some centres can advertise their services in a way that General Practitioners cannot.

(2) Some hospital clinics see patients without referral.

The Health Education Bureau could help in getting services to those most at risk. A computerized recall system would also help.

A cervical screening service would be cost effective in the long term.

PATHOLOGISTS’ VIEWS

Opinions were sought from three Pathologists actively involved in providing a cervical screening service.

The first opinion was as follows:

In the Western Health Board cervical screening is carried out by a nurse in the local Health Centre, by General Practitioners and by the Maternity Hospitals. The catchment area for this
service also takes in Tipperary, Kilkenny, Clare, Waterford and Wexford. Approximately 27,000 smears are taken annually. 50% of these are from the Galway area, and 50% of those attending have had previous smears. Women are recommended to have their second smear one year after the first and thereafter every two to three years until they are 65 years old.

Cervical screening can reduce mortality and morbidity with proper follow-up and treatment. At the moment we are only getting at the tip of the iceberg. The optimum mode of delivery should be geared to a population based programme with regular screening co-ordinated by three national centres. Each woman should be given three invitations to attend and defaulters could be followed up by Public Health Nurses.

Regarding cost effectiveness, the cost of a cervical smear can be compared to that of a haemoglobin estimation - both valuable tests. A screening programme must be done reasonably efficiently, otherwise it is no good.

Second Opinion:

In the Southern Health Board Area a cervical screening programme has been operating since 1979. The majority of smears are taken in Hospitals and Family Planning Clinics. Last year approximately 10,000 new smears were taken in a catchment area of 150,000 women at risk over the age of 20 years. There has been a 20% per annum increase in the number of smears taken.
Cervical screening is a valuable service. It is difficult to deliver a programme without computerisation. Trained staff are essential at ground level. A properly organised service is going to cost money. It is not possible to compare the needs of different regions without a pilot project. One cannot talk about cost-effectiveness except in retrospect.

**THIRD OPINION**

This Hospital Laboratory screens approximately 50,000 women annually. Source of referral is as follows:

<table>
<thead>
<tr>
<th>Area</th>
<th>% of slides referred</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Health Board</td>
<td>55%</td>
</tr>
<tr>
<td>Midland Health Board</td>
<td>9%</td>
</tr>
<tr>
<td>Mid Western Health Board</td>
<td>9%</td>
</tr>
<tr>
<td>North Eastern Health Board</td>
<td>11%</td>
</tr>
<tr>
<td>North Western Health Board</td>
<td>9%</td>
</tr>
<tr>
<td>South Eastern Health Board</td>
<td>6%</td>
</tr>
<tr>
<td>Southern Health Board</td>
<td>1%</td>
</tr>
</tbody>
</table>

Screening for Cervical Cancer is considered to be very valuable because it detects Carcinoma-in-Situ, early cancer lesions and also detects infections e.g., trichomonas. Every woman who is sexually active should have one smear initially. If this is negative the test should be repeated one year later and thereafter every three to five years. Computerisation with recall facilities is necessary for optimum mode of delivery. Health personnel at ground level who are actually taking the smears must be trained. Presently this laboratory
considers that 10% of slides referred are unsatisfactory,

To get this service to those most at risk, education should start in school and could be included in sex education talks.

Regarding cost effectiveness this is a relatively cheap screening service from the hospital point of view. The cervical screening structure needs to be well organised to be affective. One laboratory centre could handle the screening service for the whole country with the aid of other hospitals providing a diagnostic service,
The Irish Cancer Society has a twofold role in relation to cervical screening.

(1) It promotes cervical screening - lectures, leaflets etc.

(2) It funds the training of Public Health Nurses to perform screening. This is a 2 - 3 day training course which started in 1975, and initially provided training for Public Health Nurses from the country. In 1983, it extended to include Public Health Nurses from the Eastern Health Board region.

Wore cervical screening services should be provided in the community. A study of 300 women carried out in the Tullamore/Mullingar area in 1966 showed that the majority of women interviewed indicated their preference for attendance at their local Health Centre for cervical screening rather than elsewhere for the following reasons -

(1) Convenience

(2) The service was provided by a female,

Women from all socio-economic categories now seem to attend for cervical screening purposes. However, all women are not availing of the service. At present the voluntary agencies are the main bodies pushing to involve people in providing this service and in promoting it. The Cervical Cytology Screening Services should be provided in the community by Public Health Nurses at the Health Centres, and by General Practitioners.
All sexually active women should be screened every two years up to age 60 years. A better structure for delivery of the service must be developed. All attenders for cervical screening should have a card, to be stamped at the time of smear testing and retained by the woman. Women should also get a copy of the result of the cervical smear test.

As regards cost effectiveness, the cost of providing care in hospital or in the community for a case of advanced cervical carcinoma is enormous. However, no study has been done to compare these costs with those of screening.

View of a Superintendent Public Health Nurse, Eastern Health Board

In the Eastern Health Board Area, Cervical Screening Clinics are held in Community Care Areas 5, 7, 8 and 9. The Clinics are mostly staffed by Public Health Nurses. All of these Clinics are well attended and some have waiting lists. The PHN Clinics are available to those who do not wish to attend their G.P. and are valuable in so far as they meet demand and fulfill a need. Local Health Centres can deliver this service to those most at risk.

Regarding cost effectiveness, the high level of attendance must go a long way towards making these clinics cost effective. Overall it is not possible to quantify cost effectiveness.
DISCUSSION

The brilliant work of Papanicolaou laid the foundation of the cervical smear test. The value of the test lies in its ability to uncover asymptomatic malignant neoplasm in individuals unaware of their disease at a stage when the chances of cure is greatly improved or practically certain. It has application for individual women, for diagnostic purposes and for population screening. It is this latter application that is the concern of this report.

The cervical smear test is widely practiced as a screening method in many countries for the early detection of cancer of the cervix. Although it has been widely practiced for over 20 years, it is only as a result of more recent studies, particularly in the Nordic Countries, that convincing evidence of its potential benefits have been published. It has been shown that where countries implement a properly organized cervical screening programme the main objective was achieved, i.e., the reduction of mortality associated with cancer of the cervix.

Features common to some successful programmes include the use of population registers to identify women to be invited for a cervical smear test, record linkage, the appointment of one individual to be responsible and accountable in relation to the screening programme and results.

Screening was introduced in British Columbia before the rest of Canada, and there seems to have been an associated fall in death from cervical cancer (Millar et al 1976). A similar decline has occurred in the U.S. again related to the degree of screening (Cramer 1974). In Scotland screening started in the Grampian region in the early 1960's and has been followed by a decline
in mortality especially in women aged 55 - 64 years, for whom no decline has occurred in the rest of Scotland (MacGregor and Taper 1976). Similar supportive evidence has been found in Finland (Hakama and Rasanen-Virtanen 1976) and Iceland (Johannesson et al 1978).

It has been noted by Wynder and Hirayama that in the United States the survival rates for the various stages of cervical cancer has not changed for 25 years. Survival is therefore a function of the stage at which the new growth is diagnosed. Detection of the tumour at an early stage is therefore likely to be the most important factor in determining survival. Mortality should virtually be nil (zero) from carcinoma-in-situ diagnosed and suitably treated. The latent interval before more advanced stages is variable but may be up to 20 or 30 years in individual cases. This surely refutes the pessimistic view of those who frown on screening programmes in general or on cervical screening in particular.

There are still gaps in our knowledge of the natural history of cervical cancer. The principal disadvantage of screening for cervical cancer is probably the over-diagnosis of non-progressive cervical intraepithelial neoplasia particularly in young women. The progression from intraepithelial to invasive neoplasia is so uncertain that the progressive cases cannot be distinguished from the rest, so all must be treated.
On the other hand, patients under 25 years of age with clinical cancer clearly represent a rapidly progressive end of a wide range of progression rates. If there proves to be a true increase in rapid-onset disease, more frequent screening will be necessary to prevent a concomitant increase in mortality.

Repeated studies have shown that those who are at greatest risk of carcinoma of the cervix, such as the older woman of high parity in the lower social economic group are least likely to attend, while those least at risk show the most ready response to an offer of screening. The attendance for women at cytological examination has shown a similar pattern in most countries. About 10% will respond without any specific invitation, a greater number, about 40% will need some additional stimulus such as publicity or educational efforts. Lastly, about 50% will represent the hard core of resistant participation. For a screening programme to be successful, the test must be offered to all women within the appropriate age range. However, special efforts should be made to attract those who might be considered at greater risk to come forward for testing. It has been noted that there is some reluctance of women aged 40 or more to come forward for testing. Again, a special effort should be made to encourage such women to participate in any screening programme. The real challenge is to persuade women who are most at risk to come forward at intervals and in the absence of signs or symptoms, for cervical screening.

The age from which a comprehensive screening programme should be made available to women causes much discussion. Opinions within the medical profession vary on this point. Some doctors advise
smear testing from the onset of sexual activity. Others suggest two initial smears, one year apart, at an age of 25 with subsequent examination at 3 yearly intervals until about 60 years of age. Yet others consider it is only necessary to offer a comprehensive screening service to women from the age of 35 years onwards. Most are agreed that whatever age a comprehensive screening service commences that those women who seek a cervical smear test at a younger age should be accommodated. There is some evidence that cancer of the cervix is now occurring at an earlier age than was noted some decades ago. This may be accounted for by the changing pattern of sexual activity among younger women. However, deaths and diagnosis of cervical cancer in women under 35 years of age is small when compared to the numbers seen after that age.

Having considered the evidence, this Committee recommends that a comprehensive cervical smear screening programme should commence at about 25 years of age.

However, successful screening depends not only on reaching a high proportion of women at risk but also on high standard of smear taking and laboratory screening. As false negative smear reports may be as high as 20% it is recommended that two initial tests be carried out one year apart. If both are negative women should be recalled for screening thereafter at 5 yearly intervals until about 65 years of age. In addition, the service should be offered to women under 25 years of age who are sexually active. A major effort should be made to screen women over 35 years of age at appropriate regular intervals.
The Committee considered at some length a United Kingdom Working Party Report which was submitted to the Department of Health and Social Security in that country in 1981 relating to the age and frequency of cervical cytology. The screening programme in England and Wales failed because of problems inherent in design, management and implementation. Fundamental flaws in the call or recall system and in the on-going evaluation of the programme meant that the majority of women most at risk were not screened and avoidable deaths from cancer of the cervix were not prevented.

An examination of the present situation in Ireland concerning cervical smear screening, shows that while there is much well meaning activity in this area, the impact in relation to mortality statistics has been negligible. While considerable effort and resources are expended on cervical smear screening, the organisation of an adequate programme, in so far as it exists at all, is haphazard. There appears to be a total lack of data in relation to what is happening in Ireland. While an estimate can be made of the total number of cervical smears carried out in this country per annum, there is little or no data available to indicate the number of women screened, their age or socio-economic group. It is not known how many of the tests carried out were for diagnostic reasons as opposed to general screening. Nor is there information available on which to determine how many of the tests carried out per annum were repeat tests on women already tested. Some might consider that the present situation in this country as regards cervical smear testing is of questionable value. It may be that a select group of low risk women may be over utilising the service.
It is the view of this Committee that there is a need for an organised cervical smear screening service to be established in Ireland. Essential to any such programme is the establishment of adequate information systems so as to enable satisfactory monitoring and evaluation of screening.

The Committee is of the view that cervical smear testing should not be the exclusive province of any one group of doctors. Rather, if a programme is to be of maximum impact, the test should be available from/through a variety of sources such as family doctors, hospitals and health board clinics. However, information linkage is essential and funding for any individual doctors or organisations providing a cervical smear testing facility should be dependent on the return of appropriate information regarding each procedure to the national or regional director of the cervical smear screening programme.

An editorial in the Lancet (August, 1985) titled "Cancer of the Cervix: Death by Incompetence" noted that in England and Wales cancer of the cervix kills 2,000 women each year. Deaths occur within an annual background of 4,000 cases of cervical cancer known to the National Cancer Register. Since cytological screening was introduced on a large scale in the U.K. around 1964, mortality has declined by 1% per year. However, that seemed to be the rate at which it has been declining for several decades previously. The editorial noted that the number of cervical smears carried out in the United Kingdom is now 3 million a year, twice the number than in 1964 and that to the past 20 years, approximately 40 million smears had been done. Of these, 5 per 1,000 were judged positive for cervical intraepithelial neoplasia, leading to about 200,000 cone excisions with prevention of perhaps 1,000 of 45,000 deaths
from cervical cancer during that period. The conclusion to be drawn is that in the United Kingdom, 40,000 cervical smears and 200 excision biopsies are made for every life saved, which the editorial noted was a previously poor cost/benefit ratio.

It was noted that such inefficiencies are not inevitable. In Finland, Denmark, Iceland, Sweden and the North-East of Scotland, with similar resources and expenditure, mortality has been cut and continues to fall. Performance in these countries is commensurate with computer predictions of programmes effectiveness with optimum deployment. The editorial noted that the most successful programmes have the following points in common:

1) they are organised as public health cancer control programmes specifically directed towards a reduction of mortality; that is they have explicit objectives. They are not simply laboratory services for providing clinical investigation.

2) they call the age groups at greatest and most immediate risk (thirty plus) and they keep on trying. They concentrate first upon women who have never had a smear at all. They use population registers.

3) someone is in charge; he or she has a name and a phone number and can be held to account.

The Committee is unequivocally of the view that for any cervical smear screening programme to be effective in Ireland, it is mandatory to incorporate the foregoing features.
The present cervical screening service has evolved over a number of years, and there has been a considerable investment of resources in its development. The establishment of a comprehensive screening service would involve a substantial increase in the number of smears to be processed annually. It is difficult to calculate accurately what costs this would entail. Some of the increased volume of work could be absorbed with more efficient use of present services. However, funds will be required for additional staff and laboratory facilities, for the establishment of adequate information systems and education programmes.

Having reviewed the literature and given due consideration to the apparent small number of notified deaths (60 approx), from carcinoma of the cervix, the committee nevertheless considers a National Screening Programme is justified for this preventable disease. To this end the recommendations are what the committee would consider as minimum requirements.
RECOMMENDATIONS

1. A National Committee should be appointed and charged with organising an effective programme for cervical cancer control. It must be specifically organised as a Public Health cancer control programme directed towards a significant reduction in mortality from cervical cancer.

2. The Committee should engage a Community Physician as Director, who would be responsible for the day-to-day organisation of its screening programme and also would be accountable for its delivery. This model could be applied nationally or regionally.

3. Well organised laboratory services for reporting on smears must be provided.

4. Information systems must be such as to enable satisfactory monitoring and evaluation of the scheme, preferably computerized.

5. A specially designed education programme is essential. This should be directed at the high risk groups.

6. Cervical screening must be widely available through Family Doctors, Hospitals and Clinics, however, information linkage is essential.
7. Ideally, a population register of women in relevant age groups should be available. In the interim, the G.M.S. records could be used and access to other sources (e.g., General Practitioner, Hospital and employment records) might be sought.

8. Women should be called individually for screening and a satisfactory recall system should be organised.

9. All tests, positive or negative, should be reported to the referral agency, who in turn would inform the woman concerned and arrange follow up as appropriate.

10. Recommended ages for screening —

   (a) Screening should commence at 25 years. If initial smear is negative a further test should be done within a year.

   (b) Recall for screening at 5 yearly intervals up to age 65 years when screening can cease if 2 recent smears were normal and no past history of abnormal smears.

   (c) Woman under 25 years if sexually active.

11. Screening should be routinely offered to the following groups —

   (a) women attending ante-natal, gynaecological and family planning clinics, especially those of high parity and low socio-economic groups.
11. (b) all women over 35 years admitted to hospital for whatever reason who have not been screened recently should be offered the test.

(c) women attending Sexually Transmitted Disease clinics

(d) inmates of penal institutions.

12. Given the present limited resources, the policy of taking too frequent smears in young women should be discouraged.

13. We recommend ongoing research in the light of which the recommendations may need to be reviewed at a future date.
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