7. THE ECONOMICS OF CERVICAL CANCER SCREENING

7.1 FINANCIAL COST OF CERVICAL CANCER SCREENING

The likely financial cost to governments of introducing the recommended organised approach to cervical cancer screening is summarised in Tables 7.1 and 7.2. Table 7.1 presents the national program cost estimates for a two year screening interval, while Table 7.2 provides the national program cost estimates for a three year screening interval. In both tables estimates are provided assuming that Pap smear reporting is undertaken at $12.00 per Pap smear. This amount is based on the independent costing of four government pathology laboratories undertaken by the Screening Evaluation Coordination Unit; see Appendix 5). Cost estimates are also provided on the alternative assumption that reporting is undertaken at $16.50 per Pap smear (the current HIC rebate for pathology item 2338 SP).

The cost estimates for the national program are based on achieving the "Health For All" target of 75% participation in cervical cancer screening by 1995 (refer Notes to the Tables for further details). They include provision for coordination/evaluation at the Commonwealth and State/Territory government levels, the cost of the screening element of the program and the costs of follow-up assessment and management.

The estimates for the screening element of the national program include the cost of recruitment and associated educational activities, the cost of Pap smear taking and reporting, as well as the costs of notification of results and counselling. The costs of a cytology registry that individual States/Territories may choose to provide are included in the cost estimates for coordination/evaluation at the State/Territory government level.

The financial cost estimates are provided for three major groups of women - women living in metropolitan areas, women living in rural areas, and Aboriginal/Torres Strait Islander women living in rural and remote areas of Australia. This approach was taken in order to incorporate into the estimates the important differences between these groups of women in terms of current and future screening participation rates, the probability of follow-up diagnosis and management being required, and the nature and cost of screening programs appropriate to each group. While these three categories do not necessarily reflect the screening characteristics of all the special needs groups, (women of non-English speaking background or lower socioeconomic groups may have different needs for example), they do provide a representative range of cost estimates for standard and special purpose screening programs.

The cost estimates summarised in Tables 7.1 and 7.2 provide $2 million per annum in funding for coordination and evaluation activities for a national program costing approximately $104-$153 million a year by 1995 (depending

TABLE 7.1 Projected annual financial costs(a) to governments over five years of screening women aged 18–69 years every two years using an organised approach

ORGANISED APPROACH	1991 $M	1992 $M	1993 $M	1994 $M	1995 $M
National coordination, monitoring and evaluation(b)	0.2	0.2	0.2	0.2	0.2
State/Territory coordination, monitoring and evaluation(b)	1.8	1.8	1.8	1.8	1.8
Screening(c)					
By population sub group					
– Metropolitan women(d)	31.3	36.0	40.9	45.9	51.1
– Rural women(e)	17.2	19.8	22.6	25.4	28.4
– Aboriginal/Torres Strait Islander women in rural/remote areas(f)	0.54	0.73	0.93	1.12	1.32
– **Total screening(g)**	**49.0** (54.4)	**56.6** (62.8)	**64.4** (71.5)	**72.4** (80.5)	**80.7** (89.6)
By screening pathway(h)					
– Recruitment/education	7.7	9.0	10.3	11.6	13.0
– Smear taking	25.5	29.4	33.4	37.6	42.0
– Smear reading	15.8	18.2	20.7	23.2	25.7
– **Total screening**	**49.0**	**56.6**	**64.4**	**72.4**	**80.7**
Follow-up assessment and management(i)					
– Metropolitan women(j)	28.7	32.9	37.2	41.6	46.2
– Rural women(k)	14.6	16.9	19.2	21.6	24.0
– Aboriginal/Torres Strait Islander women in rural/remote areas(l)	0.14	0.19	0.24	0.29	0.34
– **Total assessment/management**	**43.5**	**50.0**	**56.6**	**63.5**	**70.5**
Estimated cost of national structured approach to screening(m)	**94.5** (99.9)	**108.5** (114.8)	**123.0** (130.1)	**137.9** (145.9)	**153.3** (162.2)

NOTES:

(a) Costs are expressed in 1990 prices with no discounting.

(b) Preliminary estimates based on the costs associated with operating the Screening Evaluation Coordination Unit at the Australian Institute of Health and additional activities required to implement the national program, including $1.3 M for cytology registries or similar monitoring activities and $0.5 M for coordination.

(c) Cost of screening includes costs of recruitment and associated educational activities, Pap smear taking and reporting, follow-up diagnosis and management, notification of results and counselling. A cost per screen estimate (refer Tables 7.5 and 7.6) is applied to the projected demand for screening for each group of women. The projected demand is based on the Australian Bureau of Statistics Series C population projections for women aged 18–69 years (adjusted to represent women with an intact uterus) multiplied by age specific screening participation rates and divided by the screening interval. The 1990 estimates for age specific participation rates for each screening interval are based on Health Insurance Commission data over the period 1987 to 1989, supplemented by information from the pilot projects. The growth rates implied in achieving the 'Health for All' targets are then applied for subsequent years.

(d) "Metropolitan" is defined as the population of all capital city statistical divisions and all statistical divisions of 100,000 or more people. Current metropolitan participation rates (based on Health Insurance Commission data) were increased linearly so that the total target group participation rate reached 75% by 1995 (and 90% by the year 2000). The current age distribution of participants in screening was maintained over the period.

(e) "Rural" population estimates are obtained by subtracting "metropolitan" and "Aboriginal/Torres Strait Islander" population estimates from the total population. Current rural participation rates (based on HIC data) were increased at the same rate as those for the metropolitan sector, but since they start from a lower base, they reached the 75% and 90% targets later. The current age distribution for participation in screening was maintained over the period.

(f) The "Aboriginal/Torres Strait Islander" population estimates are taken from the 1986 Census for parts of Australia outside major urban areas (i.e., those with a population of less than 100,000). The population projections were obtained by applying age specific general population growth rates to each age group of Aboriginal/Islander people. Current Aboriginal/Islander participation rates were based on advice from the pilot projects that screening rates were below 10% of the target group and concentrated in the under 35 year age group. Participation rates were increased over the 1990-1995 period as per the rural group.

(g) The screening cost estimate in brackets is estimated on the basis that the current HIC 85% rebate of $16.50 (Item 2338 SP) for Pap smear reporting remains. The estimate of $12 for Pap smear reporting incorporated into the pilot project costings is based on the independent analysis of the cost of reporting a Pap smear in four government laboratories carried out by Screening Evaluation Coordination Unit as part of the national evaluation.

(h) The breakdown of screening costs by screening pathway is based on the percentages set out in Table 7.5.

(i) The cost estimates for follow-up and treatment were based on unit costs per procedure using the Medicare 85% rebate levels applied to simplified diagnosis/treatment regimes. The probability that women followed-up would have various combinations of procedures was estimated from the pilot project data bases and VCS and yielded a weighted average cost of $426 per woman followed-up. The follow-up rates were estimated by 5 year age group, also using the pilot project data and VCS. The rates were based on a Pap smear report of a benign abnormality of a more serious type (i.e. with a recommendation for either repeat cytology within 6 months or further investigation), HPV infection, CIN I to III and invasive cancer.

(j) Proportion of Pap smear reports requiring follow-up based on VCS data for 1989.

(k) Proportion of Pap smear reports requiring follow-up based on pilot project data for the Upper Spencer Gulf pilot project for 1989.

(l) Proportion of Pap smear reports requiring follow-up based on pilot projects in Qld and NT providing screening services to rural and remote Aboriginal/Torres Strait Islander women.

(m) The estimate in brackets gives the financial cost of implementing the national program if the cost of Pap smear reporting remains at $16.50.

TABLE 7.2 Projected financial annual costs(a) to governments over five years of screening women aged 18–69 every three years using an organised approach.

ORGANISED APPROACH	1991 $M	1992 $M	1993 $M	1994 $M	1995 $M
National coordination, monitoring and evaluation(b)	0.2	0.2	0.2	0.2	0.2
State/Territory coordination, monitoring and evaluation(b)	1.8	1.8	1.8	1.8	1.8
Screening(c)					
By population sub group					
– Metropolitan women(d)	26.0	27.9	29.9	31.9	34.0
– Rural women(e)	14.1	15.7	17.9	18.7	19.6
– Aboriginal/Torres Strait Islander women in rural/remote areas(f)	0.36	0.49	0.62	0.75	0.88
– **Total screening(g)**	**40.4** (44.9)	**44.1** (49.0)	**48.4** (53.7)	**51.4** (57.1)	**54.5** (60.5)
By screening pathway(h)					
– Recruitment/education	6.3	7.0	7.8	8.3	8.8
– Smear taking	21.0	23.0	25.1	26.7	28.3
– Smear reading	13.1	14.1	15.5	16.4	17.4
– **Total screening**	**40.4**	**44.1**	**48.4**	**51.4**	**54.5**
Follow–up assessment and management(i)					
– Metropolitan women(j)	24.0	25.6	27.3	29.1	30.9
– Rural women(k)	12.0	13.4	15.2	15.9	16.5
– Aboriginal/Torres Strait Islander women in rural/remote areas(l)	0.09	0.13	0.16	0.19	0.23
– **Total assessment/management**	**36.1**	**39.1**	**42.7**	**45.1**	**47.6**
Estimated cost of national structured approach to screening(m)	**78.5** (83.0)	**85.2** (90.1)	**93.1** (98.4)	**98.5** (104.2)	**104.1** (110.1)

NOTES:

These notes are identical to those listed under Table 7.1.

on screening interval). It is important to note that almost half of this cost is estimated to be taken up by follow-up diagnosis and management of women in whom screening detects an abnormality. If the cost of Pap smear reporting remains at $16.50 per Pap smear, rather than being reduced to the $12.00 estimate assumed in the cost estimates of an organised approach, then the cost of the national program rises to $110-$162 million a year by 1995 (depending on screening interval).

The cost estimates for an organised approach to cervical cancer screening compare favourably with the likely cost of continuing with the current approach. Table 7.3 presents cost estimates of continuing with the current approach for the period 1991 to 1995. Estimates are presented assuming a continuation of the 1989 screening participation levels and for the alternative (less likely) scenario that the "Health for All" target of 75% participation by 1995 is achieved without an organised approach to recruitment.

Table 7.4 summarises the cost estimates for the current approach and the recommended organised approach. It indicates that if a two year screening interval were uniformly implemented, additional expenditure may not be required at all until 1994, at which time the need for additional funding would be approximately $6 million a year (or $14 million a year if the Pap smear reporting fee is not reduced). If a three year screening interval were to be uniformly implemented, additional expenditure may not be required until well after 1995, irrespective of the fee charged for Pap smear reporting.

The main reason for this favourable comparison is the significant potential for cost savings stemming from the adoption of two yearly or three yearly screening, compared with annual screening. In fact, if the same growth rates are applied to both the current approach and the organised approach with a three year interval, the potential cost savings actually increase between 1991 and 1995.

The assumption in the national program estimates that a uniform fee of $12.00 will apply for Pap smear reporting has an important but less significant impact on costs than screening interval. By 1995 this option offers a potential cost saving per screening round of approximately $14 million on the assumption that public laboratories report 20% of Pap smears.

The financial estimates in Tables 7.1 and 7.2 have been calculated on the basis of screening women aged 18 to 69 years. The cost-effectiveness results reported in Tables 7.10 and 7.11 cast doubt on the merit of screening women aged 18-24 years. If this age group were excluded from the screening program, the financial saving to governments would be $35 million per year by 1995.

No account has been taken in the estimates of any savings in treatment costs of women with advanced cancer that might

TABLE 7.3 Projected financial annual costs(a) to governments over five years of screening women aged 18–69 years using the current approach

CURRENT APPROACH	1991 $M	1992 $M	1993 $M	1994 $M	1995 $M
Scenario one(b)					
Assuming continuation of 1989 screening participation levels					
- Screening	61.6	62.5	63.4	64.3	65.3
- Follow-up assessment and management	65.5	66.2	66.9	67.8	68.6
Total	**127.1**	**128.7**	**130.3**	**132.1**	**133.9**
Scenario two(c)					
Assuming "Health for All" participation targets are achieved					
- Screening	61.6	66.1	70.7	75.5	80.4
- Follow-up assessment and management	65.5	70.0	74.7	79.5	84.4
Total	**127.1**	**136.1**	**145.4**	**155.0**	**164.8**

NOTES:

(a) Costs are expressed in 1990 prices with no discounting.

(b) Refer Section 5.3 for detail on current screening participation and follow-up rates and associated cost assumptions. To calculate the number of Pap smears likely to be taken in 1991–1995, the number of Pap smears taken in 1989 was converted to age specific participation rates and applied to the Australian Bureau of Statistics Series C population projections.

(c) Capping the participation rate at the 1989 level yields a conservative estimate of the cost of continuing with the current approach. Scenario two provides an alternative formulation where the growth in age specific participation rates assumed in the metropolitan project case are employed (i.e. achieving 75% overall participation by 1995).

TABLE 7.4 Comparison of the projected annual financial costs(a) to governments of the current approach and the alternative organised approach to cervical cancer screening

	1991 $M	1992 $M	1993 $M	1994 $M	1995 $M
Cost of current screening activities(b)	127.1 (127.1)	128.7 (136.1)	130.3 (145.4)	132.1 (155.0)	133.9 (164.8)
SCENARIO ONE(c)					
Cost of recommended organised approach assuming cervical cytology cost of $12					
- two year screening interval	94.5	108.5	123.0	137.9	153.3
- three year screening interval	78.5	85.2	93.1	98.5	104.1
Net cost of organised approach for Scenario One(d)					
- two year screening interval	-32.6 (-32.6)	-20.2 (-27.6)	-7.3 (-22.4)	5.8 (-17.1)	19.4 (-11.5)
- three year screening interval	-48.6 (-48.6)	-43.5 (-50.9)	-37.2 (-52.3)	-33.6 (-56.5)	-29.8 (-60.7)
SCENARIO TWO(c)					
Cost of recommended organised approach assuming cost of cervical cytology stays at $16.50					
- two year interval	99.9	114.8	130.1	145.9	162.2
- three year interval	83.0	90.1	98.4	104.2	110.1
Net cost of organised approach for Scenario Two(d)					
- two year interval	-27.1 (-27.1)	-13.9 (-21.3)	-0.2 (-15.3)	13.8 (-9.1)	28.3 (-2.6)
- three year interval	-44.1 (-44.1)	-38.6 (-46.0)	-31.9 (-47.0)	-27.9 (-50.8)	-23.8 (-54.7)

NOTES:

(a) Cost estimates are expressed in 1990 prices with no discounting.

(b) Refer Table 7.3 for the derivation of these estimates. The estimates in brackets assume a growth in the participation rate equivalent to that assumed in the organised approach (i.e. achievement of the "Health for All" target of 75% participation by 1995).

(c) Refer Tables 7.1 and 7.2 for the derivation of these estimates.

(d) Estimates in brackets give the net cost assuming a growth in the participation rate for the current approach equivalent to that assumed in the organised approach. Estimates with a minus sign denote potential cost savings, assuming the structured approach was fully implemented.

accrue from higher participation rates or from agreed management protocols that may accompany implementation of the recommended organised approach.

7.1.1 Screening and follow-up costs

With one exception, the cost estimates for the screening elements of the national program are based on data from the pilot projects summarised in Tables 7.5 and 7.6. The exception is the cost estimates for Pap smear taking by general practitioners, which was not a pilot project, but is included to reflect the important role that general practitioners play in cervical cancer screening.

On the basis of the data summarised in Tables 7.5 and 7.6, the average cost to governments of screening for women living in metropolitan areas was estimated to be $35.00 per Pap smear, the average cost for women living in rural areas was estimated to be $55.00 per Pap smear, and the average cost for Aboriginal and Torres Strait Islander women living in rural or remote parts of Australia was estimated to be $221.00 per Pap smear. Data from the Australian Capital Territory pilot project and the Kalgoorlie pilot project illustrate that special purpose urban and rural screening programs (which tend to have high recruitment costs and low screening rates) are also likely to experience above average costs for the Pap smears taken in the special clinics. The Notes to Tables 7.5 and 7.6 provide some comment on each of the pilot projects and their cost data.

The cost estimates for follow-up and management were based on unit costs per procedure using the Medicare 85% rebate levels applied to simplified diagnosis/management regimens (refer Table 5.7 and Figure 5.2 in Section 5.3.2). The cost estimates do not include any provision for the treatment of invasive cervical cancer.

The proportion of women screened who are likely to have follow-up diagnosis and management was estimated using data from the pilot projects and the Victorian Cytology Service (VCS). The follow-up rates were estimated by five year age groups for metropolitan, rural and Aboriginal/Torres Strait Islander women (refer Notes (i) to (k) in Table 7.1). The probability that women followed up would have various combinations of procedures (i.e. repeat Pap smears or colposcopy plus review or colposcopy plus laser/conisation/diathermy etc, plus review) was also estimated from pilot project data.

A summary of the results presented as the average cost of follow-up per Pap smear is given in Table 7.5. The average cost to governments, averaged over all Pap smears, for diagnosis/management among urban women is $29.00 per Pap smear (compared with the screening cost of $35.00 per Pap smear). For rural women it is $45.00 per Pap smear (compared with a screening cost of $55.00), while for Aboriginal/Torres Strait Islander women it is $58.00 (compared with a screening cost of $221.00). The estimate of

TABLE 7.5 Pilot project data on cost per screen by screening pathway

	Recruitment/recall		Pap smear collection		Pap smear reading(k)		Quality control & training		Total (A) (excluding diagnosis & management)		Estimates(1) for diagnosis & management	Total (B) (including diagnosis & management)
URBAN PILOT PROJECTS												
(a) ACT Pap smear campaign	$25	37%	$29	42%	$12	18%	$2	3%	$68	100%	$29	$97
(b) QLD Royal Women's Hospital Clinic	$10	28%	$14	39%	$12	33%	–	–	$36	100%	$29	$65
(c) NSW Nurse Practitioners project	$1	3%	$18	58%	$12	39%	–	–	$31	100%	$29	$60
(d) Cost of screening by GP	$5	14%	$18	52%	$12	34%	–	–	$35	100%	$29	$64
Average for urban pilot projects (excluding ACT)	**$5**	**14%**	**$17**	**50%**	**$12**	**36%**	–	–	**$35**	**100%**	**$29**	**$64**
RURAL PILOT PROJECTS												
(e) SA Upper Spencer Gulf project	$21	33%	$20	31%	$12	19%	$11	17%	$64	100%	$45	$109
(f) QLD Rural Women's project	$8	17%	$28	58%	$12	25%	–	–	$48	100%	$45	$93
(g) NSW Nurse Practitioners project	$2	3%	$39	74%	$12	23%	–	–	$53	100%	$45	$98
(h) WA Kalgoorlie (preliminary estimates)	$12	24%	$18	35%	$12	23%	$9	18%	$51	100%	$45	$96
Average for rural pilot projects	**$10**	**18%**	**$29**	**53%**	**$12**	**22%**	**$4**	**7%**	**$55**	**100%**	$45	$100
RURAL/REMOTE ABORIGINAL/ISLANDER PILOT PROJECTS												
(i) QLD Remote Aboriginal & Islander project	$6	12%	$6	14%	$12	27%	$22	47%	$46	100%	$58	$104
(j) NT Traditional Aboriginal screening project	$242	61%	$143	36%	$12	3%	–	–	$397	100%	$58	$455
Average for rural/remote Aboriginal/Islander pilot projects	**$124**	**56%**	**$74**	**34%**	**$12**	**5%**	**$11**	**5%**	**$221**	**100%**	$58	$279

Notes to Table 7.5

(a) The Australian Capital Territory Pap Smear Campaign carried out extensive promotion, education and clinical services from June to November 1989 targeted at women aged 40 and over, particularly Aboriginal women and those of non-English speaking background. Promotion and education activities were held in workplaces, social and church groups. An intense media campaign was also employed using all three forms of media. Pap smears were taken by nurse practitioners at eight venues and a community medical practitioner was available for case management. If the cost per screen estimates were based on the 397 Pap smears taken by the campaign clinics alone, the average cost per screen (excluding diagnosis and management) would be $263. It should be noted, however, that the vigorous recruitment campaign also led to an increase in the number of women attending their general practitioners for Pap smears. HIC data indicate an increase of 13.2% over the same 6 month period of the previous year or 1958 Pap smears. If the additional 1958 Pap smears recorded by the Health Insurance Commission are added to the 397 Pap smears taken by the nurse practitioners, the cost per Pap smear of the program drops from $263 to the $68 estimate in Table 7.5. While the recruitment expenditure represents $150 per Pap smear taken by the campaign, it represents $25 per additional Pap smear taken in the ACT or $2 per Pap smear taken in the Australian Capital Territory as a whole.

(b) As part of the Queensland cervical screening initiatives, a clinic was set up at the Royal Women's Hospital offering a screening service by a female medical practitioner. Recruitment activities were not undertaken by the Hospital, but by the project staff at the Queensland Department of Health, who conducted the State-wide campaign in conjunction with the Queensland Cancer Fund.

(c) One aim of the New South Wales Nurse Practitioner's Project was to estimate the cost of cervical cancer screening currently provided by the Women's Health Nurses in New South Wales. The women's health nurse practices in the Mt Druitt/Hawkesbury areas was taken as the basis of the study, together with sensitivity analysis to cover practices that differ from the Mt Druitt/Hawkesbury areas.

(d) These cost estimates are provided by the Screening Evaluation Coordination Unit and were included to reflect the important role that general practitioners play in screen taking. The estimate of $5 per screen for recruitment/education is to cover activities that would be undertaken by governments. The estimate of $18 for Pap smear taking is based on the Health Insurance Commission 85% rebate for a 'B' level general consultation, rounded to the nearest dollar. The estimate of $12 for Pap smear reporting is based on the independent costing of cervical cytology in four government pathology laboratories carried out by the Screening Evaluation Coordination Unit as part of the national evaluation. No separate estimate was included for quality control/training.

(e) Screening rates were lower in the Upper Spencer Gulf region than for South Australia as a whole prior to commencement of the pilot project. The timing and patterns of intervention varied across the major towns of Port Augusta, Port Pirie and Whyalla. A community development approach was used and various combinations of the following strategies were employed: recruitment and screening of women by general practitioners; provision of special clinics conducted by nurses; community networking, education and targeted promotion; and provision and promotion of cervical screening reminder services. Aggregated results are presented in Tables 7.5 and 7.6.

(f) During October and November 1989 a Queensland Government Pap smear service was offered in the Central Highlands district (inland of Rockhampton) to each of ten rural towns. The service was generally provided at the outpatients department of the local community hospital, but at one locality was provided at the local practitioner's clinic. In each town a female medical practitioner, who either resided in the town or agreed to travel to the town, provided the service. The cost estimates for recruitment include the locally conducted activities plus a pro rated amount for the State-wide recruitment/education campaign (which cost approximately $1.22 per Pap smear taken in Queensland during 1989).

Notes to 7.5 (Continued)

(g) These estimates were derived from the sensitivity analysis associated with the costing of the Mount Druitt/Hawkesbury areas (See Note (3)). The estimates include a greater provision for travel and associated implications incurred in providing a service to more distant rural locations.

(h) This is one of five pilot projects administered by the Women's Cancer Prevention Unit. The rural/remote area cervical cancer screening project was targeted primarily at Aboriginal women and aimed to enhance existing services by providing additional Pap smear clinics staffed by community nurses. Four community nurses were trained and regular clinics were conducted in Kalgoorlie, Norseman and Leonora. The cost estimates are for 1989 and were divided by the total number of Pap smears taken (5099) in Kalgoorlie in 1989. The cost estimates should be divided by the increase in the number of Pap smears taken, but this figure is not available. Consequently, the cost estimates are underestimates of the true cost per Pap smear of this project. Attendance by the "special needs" groups at the nurse practitioner clinics was low (235 women in 1989). If the costs of the pilot project were divided by the number of Pap smears taken by nurse practitioners, the cost per Pap smear of the program would be significantly higher (over $700 per Pap smear) than $51.

(i) Whilst Aboriginal and Islander women live in any one of three areas in Queensland (remote areas, rural areas, and urban areas) the average costs reported here relate only to the remote areas of Queensland, areas which include the Far North Coast, the Cape York Peninsula and the Gulf of Carpentaria. The program is assessing the efficiency of having suitably trained registered nurses take Pap smears at remote community hospitals.

(j) This pilot provided screening services to remote communities of Traditional Aboriginal women in Arhnem Land. Doctors and community nurses already known and trusted in the communities gave their time as and when required for screening. The project had a focus on education utilising two Aboriginal educators and a coordinator. The Aboriginal educators and health workers were of critical importance to facilitate effective communication between the communities and screening staff. In the first nine months the screening rate increased from 10% to 32%, with 47% of the women screened having their first Pap smear.

(k) The estimate of $12 for screen reading used in the financial cost estimates for the project case are based on an independent costing of cervical cytology in four government pathology laboratories carried out by SECU as part of the national evaluation.

(l) Refer Section 5.3 "Current expenditure on cervical cancer screening" for further detail on the derivation of these estimates.

TABLE 7.6 Pilot project data on cost per woman screened disaggregated by expenditure category

	Staff		Capital		Consumables and administration		Overheads		Other (promotional materials, repairs, maintenance, etc)		Total (A) (excluding diagnosis & management)	
URBAN PILOT PROJECTS												
(a) ACT Pap smear campaign	$31	45%	$15	22%	$4	6%	$18	27%			$68	100%
(b) QLD Royal Women's Hospital Clinic	$17	47%	$5	15%	$6	17%	$3	8%	$5	13%	$36	100%
(c) NSW Nurse Practitioners project	$14	47%	$2	6%	$14	46%	$1	2%	–	–	$31	100%
(d) Cost of screening by GP	n.a.		n.a.		n.a.		n.a.		n.a.		$35	100%
Average for urban pilot projects (excluding ACT)	**$16**	**46%**	**$4**	**11%**	**$10**	**29%**	**$2**	**6%**	**$3**	**8%**	**$35**	**100%**
RURAL PILOT PROJECTS												
(e) SA Iron Triangle project	$31	48%	$15	23%	$14	22%	$2	3%	$2	4%	$64	100%
(f) QLD Rural Women's project	$26	54%	Neg. in this project (k)		$10	20%	$3	6%	$9	20%	$48	100%
(g) NSW Nurse Practitioners project	$23	43%	$3	6%	$26	50%	$1	1%	–	–	$53	100%
(h) WA Kalgoorlie (preliminary estimates)	$26	51%	$14	27%	$7	14%	$3	7%	$1	1%	$51	100%
Average for urban pilot projects	**$26**	**47%**	**$6**	**11%**	**$17**	**31%**	**$2**	**4%**	**$4**	**7%**	**$55**	**100%**
RURAL/REMOTE ABORIGINAL/ISLANDER PILOT PROJECTS												
(i) Qld Remote Aboriginal & Islander project	$34	75%	$2	3%	$4	8%	$1	1%	$5	13%	$46	100%
(j) NT Traditional Aboriginal screening project	$214	54%	$72	18%	$99	25%	$4	1%	$8	2%	$397	100%
Average for rural/remote Aboriginal/Islander pilot projects	**$124**	**55%**	**$37**	**17%**	**$52**	**24%**	**$2**	**1%**	**$6**	**3%**	**$221**	**100%**

NOTES TO TABLE 7.6

(a) to (j) See Notes to Table 7.5.

(k) It is usual to include an estimate for the imputed rental of buildings and the annuitised cost of equipment, but for this pilot (See Note (f)) the capital costs involved are insignificant (e.g. two days use of a hospital outpatient room). The costs of medical equipment (specula, slides, etc) are included under 'consumables'.

$58.00 per Pap smear for Aboriginal/Torres Strait Islander women does not include any provision for special transport/accommodation subsidies that governments may choose to provide to enable women in remote locations to attend follow-up/management services. The differences in the average cost per Pap smear for follow-up services is purely a reflection of differential age specific follow-up rates for the different groups of women.

7.1.2 Evaluation and coordination costs

An amount of $2 million per annum is likely to be required to fund the coordination, monitoring and quality assurance functions. These estimates are only very provisional at this stage and may be modified following more detailed planning. The funds are required to ensure that the national program is implemented as intended and achieves its objectives. The significance of these functions is outlined in Sections 6.5 to 6.10 and 8.2 to 8.4.

Based on the costs associated with operating the Screening Evaluation Coordination Unit at the Australian Institute of Health and the activities for the National Advisory Committee and its Secretariat set out in Section 8.3, it is estimated that approximately $200,000 per annum will be required for coordination/evaluation activities at the national level. At the State/Territory level it is estimated that approximately $1.8 million per annum will be required. This provision is largely for cervical cytology registries ($1.3 million) (or alternative monitoring arrangements) but includes a small provision for appropriate coordination infrastructure ($0.5 million).

Data from the Victorian Cervical Cytology Registry pilot project suggest that on an annualised basis a dedicated cervical registry will cost at least $271,000 to set up and run (i.e. approximately $0.64 per woman screened in Victoria in 1989). Data from the Western Australian joint breast/cervical cancer screening registry suggest that a joint registry (where feasible) may be a little cheaper than a dedicated cervical cancer screening registry. The Western Australian Registry cost $183,094 for the calendar year 1989.

These early estimates are likely to underestimate the costs of establishing a registry because the Victorian Cervical Cytology Registry was developed using the Victorian Cytology Service database and the Western Australian registry is not yet operating on a Statewide basis. Further, the Victorian Cytology Service was already performing many of the functions of a registry. The Victorian project has estimated that by 1992/93 its minimum annual operating cost will be $427,000.

It is important to note that presentation of the costs of a registry on an annualised basis (where the cost of capital is spread over its effective life) is quite different to the up-front cash requirements of implementing a program. During

the period 1/7/89 to 30/6/90, for example, the financial expenditure for the Victorian Cervical Cytology Registry was approximately $360,000, 23% of which was committed to set-up expenses, involving such things as computer programming and liaison with participating laboratories. For the Western Australian Registry, set-up costs comprised a high proportion of the total expenditure ($130,000 or 71%) and similarly included expenditure on computers, software, consultancies and installation.

The annualised approach to the calculation of the program's capital cost implies that the up-front cost of capital items are reimbursed to service providers over the useful life of the assets involved. This brings into question issues related to the current stock of assets and the method of funding the national cervical cancer screening program.

7.2 COST-EFFECTIVENESS OF CONTINUING WITH THE CURRENT APPROACH

In Sections 5.3 and 7.1 estimates were presented of current and projected annual financial expenditure by Commonwealth and State/Territory governments in funding the present approach to cervical cancer screening. Given the limited impact of the current approach on the morbidity and mortality of cervical cancer, the question has to be asked whether it represents "value for money" in the use of finite funds available to governments for the whole range of care, cure and health promotion programs.

Further, as participation in screening programs also involves substantial costs to women and their families (for example, the gap between the fee charged for services and the Medicare rebate, time and travel costs, child-minding expenses, co-morbidity, anxiety, etc) the concept of costs needs to incorporate both costs to governments in funding service provision, and costs to women in attending the services provided.

Cost-effectiveness analysis must also have regard to the benefits arising from provision of the program. The analysis can be expressed as estimates of cost per life year gained, or where quality of life is an important consideration, as cost per quality adjusted life year gained (or cost per QALY). It was not possible to carry out research on quality of life implications of cervical cancer screening as part of the national evaluation. A quality of life adjustment factor is therefore not available at this time.

Table 7.7 presents information on costs to governments and costs to women compared with the impact the current screening approach is estimated to have on mortality from cervical cancer. This comparison is expressed as the cost per year of life gained of continuing on with the current approach for the period 1991-2020. A discount rate of 5% was applied in the calculation of the net present value of both costs and benefits. The life years gained were estimated using the 1988 Australian population structure and a computer model (Knox and Woodman, 1988) based on data from the case-control and cohort studies reported by the IARC Working Group on Evaluation of Cervical Cancer Screening Programs. The 1988 Australian population was used in the economic evaluation to estimate life years saved, 1988 being the latest year for which age specific cervical cancer mortality statistics are available. The current approach to screening is assumed to be 80% as effective as the organised approaches on which the model was calibrated (refer Section 8.1 for further discussion of this issue). Given the shortcomings of the current approach, this assumption probably produces an optimistic estimate of the benefits flowing from the current approach.

If participation by women in the current approach were to continue on at the same level as for 1989, then the economic cost per life year saved would be $44,654. If an alternative

TABLE 7.7 Economic cost of the current approach to cervical cancer screening for women aged 18–69 years for the period 1991–2020

	Assuming participation remains at the 1989 level	Assuming participation increases to achieve "Health for All" targets
Present value(a) of costs to governments of service provision		
Screening(b)	$891.0M	$1204.0M
Diagnosis/management(c)	$950.0M	$1283.0M
Total	$1841.0M	$2487.0M
Present value(a) of costs to women attending screening		
Screening(d)	$441.0M	$ 596.0M
Diagnosis/management(e)	$190.0M	$ 256.0M
Total	$631.0M	$ 852.0M
Present value(a) of total costs		
Screening	$1333.0M	$1800.0M
Diagnosis/management	$1139.0M	$1539.0M
Total	$2472.0M	$3339.0M
Present value(a) of total life years saved(f)	55,400 years (48,400 years)(g)	67,500 years (59,088 years)(g)
Average cost per life year saved	**$44,654** ($51,033)(g)	**$49,445** ($56,508)(g)

Notes:

(a) All cost and outcome estimates are for the period 1991–2020 using a 5% discount rate.

(b) Costed at $34.35 per screen and includes cost of Pap smear taking ($17.85) and the cost of Pap smear reporting ($16.50). See Note (3) to Table 7.1 for further detail.

(c) Costed at $426.00 per woman followed-up. See Note (8) to Table 7.1 for further detail.

(d) Costed at $17.00 per screen and includes the fee gap for a 'B' level general practitioner consultation and the time and travel costs to women based on survey data collected by the pilot projects.

(e) Costed at $85 per women followed-up and includes the fee gap for various procedures (see Table 5.6 for details) and the time and travel costs to women based on survey data collected by the pilot projects.

(f) Estimated using the Knox computer model (Knox and Woodman, 1988). The values of the model parameters were derived by analysis of case-control and cohort studies reported by the International Agency for Research on Cancer Working Group on Evaluation of Cervical Cancer Screening Programs. The current approach to screening is assumed to be 80% as effective as the well organised approaches reported in the IARC study. Given the shortcomings of the current approach, this assumption probably produces an optimistic estimate of the benefits flowing from the current approach.

(g) Life years saved and cost per life year gained estimates on the alternative assumption that the current approach is 70% as effective as an organised approach (see Section 8.1 for a discussion of this issue).

assumption is made that participation rates will increase and achieve the "Health for All" targets (despite the lack of organised recruitment), then the economic cost per life year gained would be $49,445. The decrease in cost-effectiveness is due to the over-screening of younger age groups which occurs with the current approach. Furthermore, the high proportion of abnormalities in younger women which are likely to regress spontaneously if left untreated results in a relatively large amount of diagnosis and management which fails to produce a substantial impact on morbidity and mortality. If the assumption that the current approach is 80% as effective as an organised approach is changed to 70%, then the cost per life year saved estimate changes to $51,033 (or $56,508 if the Health For All targets were to be achieved).

The question of whether these results represent value for money cannot be answered in absolute terms. It is necessary to examine whether an alternative approach to screening (such as that recommended in this report) or alternative programs altogether, contribute more per dollar spent to the improvement of health. These comparisons are presented in Section 7.3

7.3 COST-EFFECTIVENESS OF IMPLEMENTING AN ORGANISED APPROACH

Table 7.8 provides estimates of the economic cost of the recommended organised approach to cervical cancer screening calculated for various screening intervals. Apart from annual screening, all these intervals, when delivered within an organised approach, are clearly more cost-effective than the current situation. This is in spite of the fact that the costing of the organised approach includes higher cost screening programs designed to reach women in rural and remote areas of Australia.

Table 7.8 also provides the cost-effectiveness estimates on the basis that the cost of Pap smear reporting remains at $16.50, rather than being reduced to $12.00, as assumed in the cost estimates of the organised approach. Even under this scenario, the organised approach to screening is still substantially superior to the current approach.

While the average cost per life year estimates presented in Table 7.8 are useful as broad indicators of cost-effectiveness, they are not the most useful indicators to examine when considering questions of "how much" of a program to adopt (such as which screening interval to use or which age groups to screen) as opposed to "whether" to implement a program.

It is usual to consult marginal cost-effectiveness data when considering design options related to issues of "how much" of a program to adopt (i.e. the incremental costs and benefits of moving the screening interval from five years to four years, from four years to three years, etc). The marginal cost per life year estimates for various screening intervals, commencing at five yearly screening are presented in Table 7.9.

It would be difficult to justify the very sizeable financial cost to governments (of over $300M per year by 1995) and the poor marginal cost-effectiveness ($210,256 per life year gained or $2.5M per death averted) of an organised approach based on annual screening. It should also be noted that annual screening is the only instance where the average cost-effectiveness of an organised approach is worse than the current situation.

While there is a clear difference in cost-effectiveness between two yearly and three yearly screening in the average cost per life year estimates, the difference becomes very pronounced when considering the marginal estimates. While three yearly screening is clearly the optimal policy from an economic perspective, two yearly screening is considered by the Committee to be the best compromise to balance considerations of cost-effectiveness and acceptability to the medical community and to women. Without this acceptability it is unlikely that the very significant gains in cost-effectiveness of moving from an annual interval to a two year interval, would be achievable.

TABLE 7.8 Economic cost by screening interval of an organised approach to cervical cancer screening for women aged 18 - 69 years

	Annual	Two yearly	Three yearly	Four yearly	Five yearly
Present value(a) of costs to governments of service provision					
Screening(b)	$2349.0M	$1201.0M	$821.0M	$616.0M	$493.0M
Diagnosis/management(c)	$2005.0M	$1024.0M	$702.0M	$526.0M	$421.0M
Total	$4354.0M	$2225.0M	$1523.0M	$1142.0M	$914.0M
Present value(a) of costs to women attending screening programs					
Screening(d)	$966.0M	$494.0M	$338.0M	$254.0M	$203.0M
Diagnosis/management(e)	$400.0M	$204.0M	$140.0M	$105.0M	$84.0M
Total	$1367.0M	$699.0M	$478.0M	$359.0M	$287.0M
Present value(a) of total costs					
Screening	$3315.0M	$1695.0M	$1159.0M	$869.0M	$696.0M
Diagnosis/management	$2405.0M	$1229.0M	$842.0M	$831.0M	$505.0M
Total	$5720.0M	$2924.0M	$2001.0M	$1501.0M	$1201.0M
Present value(a) of total life years saved(f)	108,300	95,000	84,400	72,000	65,700
Average cost per life year saved(g)	52,839 (55,202)	$30,782 (32,160)	$23,703 (24,762)	$20,842 (21,774)	18,264 (19,081)

Notes:

(a) All cost and outcome estimates are for the period 1991-2020 using a 5% discount rate.

(b) Costed at $35.00 per screen for women in metropolitan areas, $55.00 per screen for women in rural areas, and $221 for Aboriginal/Torres Strait Islander women in rural/remote regions of Australia. See Section 7.1.1 for further detail on these cost per screen estimates. Cost of screening includes recruitment and associated educational activities, Pap smear taking and reporting, notification of results and counselling. The 1990 age specific participation rates are grown so as to achieve the "Health for All" targets of 75% by 1995 and 90% by the year 2000.

(c) Costed at $426.00 per woman followed-up. See Section 5.3.2, Note (c) to Table 7.1 and Section 7.1.1 for further details.

(d) Costed at $17.00 per Pap smear and includes the fee gap for a 'B' level GP consultation and the time and travel costs to women based on survey data collected by the pilot projects.

(e) Costed at $85.00 per woman followed-up and includes the fee gap for various procedures (see Table 5.6 for details) and the time and travel costs to women based on survey data collected be the pilot projects.

(f) Estimated by the Knox computer model (Knox and Woodman, 1988) using 1988 Australian population figures. The values of the model parameters were derived from analysis of case control and cohort studies reported by the International Agency for Research on Cancer Working Group on Evaluation of Cervical Cancer Screening Programs.

(g) The estimate in brackets gives the cost-effectiveness results on the assumption that the cost of Pap smear reporting remains at $16.50.

TABLE 7.9 Estimates of marginal cost per life year for various screening intervals for women aged 18-69 years

	Increase in costs from shortening the interval(a)	Life years saved from shortening the interval(a)	Marginal cost per life year of moving between policies
5 years to 4 years	$300M	6,300	$47,619
4 years to 3 years	$500M	12,400	$40,258
3 years to 2 years	$923m	10,600	$87,075
2 years to annual	$2,796M	13,300	$210,256

Notes

(a) These estimates are derived from Table 7.8.

Tables 7.10 and 7.11 provide estimates of the economic cost of the recommended organised approach for various age groups. Table 7.10 presents the average cost per life year estimates and Table 7.11 the marginal cost per life year estimates. As was the case with interval, the average cost per life year estimates show a clear difference between the cost-effectiveness of different policies, but mask the true extent of that difference. Clearly the marginal cost-effectiveness of $767,771 per additional life year saved from screening the 18-24 year age group (or $16.5 million per death averted) raises severe doubts about the merit of including this age group in a screening program. The marginal cost-effectiveness of including the 25-29 age group ($107,111) is not as poor, but certainly warrants further detailed consideration. At the other end of the age spectrum, it is interesting to note that the marginal cost-effectiveness of including the 65-69 age group ($25,814) is quite good, and that their inclusion improves the average cost-effectiveness results.

In the light of the estimates provided in Table 7.11, it is not surprising to find that several overseas countries have adopted a policy of commencing screening at a later age than 18 years (Netherlands at 35 years, Sweden at 30 years, Iceland at 25 years). The Committee is conscious of the important implications of these economic results, but is hesitant to recommend an immediate change of current policy without informed public and professional debate of the issues involved. Many within the medical community, for

TABLE 7.10 Economic cost by age group screened of an organised approach to cervical cancer screening

	Age group (years)				
	35 - 69	30 - 69	25 - 69	18 - 69	18 - 65
Two year interval					
Present value(a) of total costs(b)	$1,344M	$1,751M	$2,233M	$2,924M	$2,813M
Present value(a) of total life years saved(c)	$80,500	89,600	94,100	95,000	90,700
Average cost per life year saved	$16,684	$19,545	$23,736	$30,782	$31,006
Three year interval					
Present value(a) of total costs(b)	$917M	$1,195M	$1,527M	$2,001M	$1,925M
Present value(a) of total life years saved(c)	71,900	80,000	83,100	84,400	78,600
Average cost per life year saved	$12,752	$14,949	$18,371	$23,703	$24,500

Notes:

(a) All cost and outcome estimates are for the period 1991–2020 using a 5% discount rate.

(b) Total costs include costs to governments for service provision plus costs to women in attending screening.

(c) Estimated by the Knox Computer Model (Knox and Woodman, 1988).

TABLE 7.11 Estimates of marginal cost per life year for screening various age groups with a two year interval

	Increase in costs(a)	Increase in life(a) years saved	Marginal cost per additional life year saved
Including 30–34 year age group	$407M	9,100 yrs	$44,725
Including 25–29 year age group	$482M	4,500 yrs	$107,111
Including 18–24 year age group	$691M	900 yrs	$767,777
Including 65–69 year age group	$111M	4,300 yrs	$25,814

Notes:

(a) These estimates are derived from Table 7.10.

example, are worried about the possible existence of a rapid onset cervical cancer in younger women, and would be concerned that the cohort and case control studies on which these cost-effectiveness results are based, do not adequately reflect this possibility.

The Committee recommends that in the immediate future the commencement age for screening should stay at 18 years (or within one year of first sexual intercourse, whichever comes later) but that informed public debate of this policy should take place as soon as possible, with a view to achieving a consensus on a later commencement age for cervical cancer screening.

7.3.1 Comparison with cost-effectiveness results for other selected programs

The economic results presented above indicate that an organised approach to cervical cancer screening of women aged 18 to 69 years with a two year screening interval is clearly more cost-effective than the current approach. Tables 7.12 and 7.13 provide cost-effectiveness results for other possible uses of the health service resources. While comparison with Australian studies employing consistent methodologies is clearly preferable, there are very few Australian studies available which have calculated cost per life year or cost per QALY results (or from which cost per life year or cost per QALY results can be derived) for health care, cure or promotion programs. These are presented in Table 7.12.

To assist in the consideration of possible alternative uses for the funds required for an organised approach to cervical cancer screening, overseas results have also been provided in Table 7.13. Care should be taken in making judgements based on inter-country comparisons as there are often important differences between countries in their health service systems, in treatment patterns and in associated health service costs. The different cost per life year results for similar programs in Tables 7.12 and 7.13 illustrates this. The evaluation studies cited use similar but not identical methodologies.

In examining the comparative results presented in Tables 7.12 and 7.13 it is important to bear in mind that there is no specific rule in cost-effectiveness and cost-utility evaluation. What is acceptable expenditure in a well-endowed health care setting may not be so in a more financially constrained situation. Moreover, considerations other than those of an economic nature are also clearly important in decisions on health expenditure between care, cure and health promotion programs. There may also be other interventions which are currently not funded which, if evaluated, may cost less per life year saved than cervical cancer screening.

This being said, it does seem reasonable nonetheless to take as a guide to what an acceptable cost-effectiveness

TABLE 7.12 Comparative Australian cost utility/cost effectiveness results(a)

Program (reference)	Adjusted cost per life year or per QALY at 1988-89 prices
Care/cure programs	
AIDS treatment with zidovudine (Cooper and Elias (1990))	$130,000 per(b) life year
Hospital dialysis (Doessel D P (1978))	$47,789 per(c) QALY
Cervical cancer screening provided by the recommended organised approach	**$30,782 per life year**
Breast cancer screening ([Report, (1990)])	$6,600-$11,000(d) per life year
Neonatal intensive care, babies < 801g (John et al., 1983 and Yu et al., 1981)	$3,600-$4,600(e) per life year
Kidney transplant (Doessel, 1978)	$4,596 per(c) life year
Neonatal intensive care, babies 1000-1500g (John et al., 1983 and Yu et al., 1981)	$1,200-$3,000(d) per life year
Health promotion programs	
Non-drug blood pressure reduction clinic (Viney et al., 1990)	$5,000 per(f) life year
Sydney Quit Smoking Campaign (Dwyer et al., 1986)	$16 per life(g) year

Notes:

(a) Many of these cost per life year results were not derived by the authors but have been calculated by the Australian Institute of Health based on the cost data in the articles to give some illustrative Australian results. The definition of costs is not consistent across all studies and the life years saved estimates are very approximate. The results should be interpreted with appropriate caution as providing order-of-magnitude estimates only. Cost data for years prior to 1988/89 have been inflated using the health expenditure index. A 5% discount rate has been applied to life years (except for the Doessel study where the author used 4%).

(b) The Cooper and Elias (1990) study estimates the extra cost of treating Australian patients with ARC and AIDS with zidovudine as $120,000 per patient, with a resultant increase in life span of 11 months. This gives a cost per life year of $130,000. The cost per quality adjusted life year would be lower as zidovudine significantly improves quality of life, but as no measures are yet available on the extent of the quality improvement, a cost per quality adjusted life year (QALY) cannot be calculated. Recent evidence also suggests that if zidovudine is given early on in the treatment process, life prolongation benefits would be greater.

(c) The Doessel kidney dialysis and kidney transplantation study provides cost per QALY estimates but is based on 1968-69 costs to service provider data. The dollars per life year figures were inflated to 1988-89 prices using the GDP price inflator for the years 1968-1969 to 1970-71 and the health price inflator for the period 1970-71 to 1988-89. The original 1968-69 prices were $706 per life year for kidney transplantations and $4,184 per life year for hospital dialysis. The AIH applied a quality adjustment factor of 0.57 to the kidney dialysis life years saved (Torrance, 1987). The author used a discount rate of 4%.

(d) Report to the Australian Health Ministers' Advisory Council by the Breast Cancer Screening Evaluation Steering Committee, Australian Institute of Health, 10 May 1990. The estimate of $11,000 is the gross cost per life year for the national program, while the estimate of $6,600 is the net cost per life year when the base case is included (ie, when the costs and benefits of current "de facto" screening are taken into account). The costs are based on a computer model which incorporates data from only two of the four prospective trials - the Health Insurance Plan and the Swedish Two County study, both of which documented a 30% reduction in breast cancer mortality at seven years. The two other prospective trials documented lower reductions in mortality, but a combined analysis of all these studies controlling for non-attendance at screening indicated a breast cancer mortality reduction in the range of 30%-35%.

(e) The authors provided cost to service provider estimates during neonatal intensive care which have been inflated to 1988-89 prices using the health expenditure index. Infants are assumed to have an average life expectancy of 75 years which has been discounted at 5%. It is doubtful whether the costs accurately reflect all the resource costs to parents and the health sector (costs incurred after initial intensive care episode not included, for example), but give a useful order of magnitude estimate.

(f) The Viney study analysed the blood pressure reductions that occurred in a group of Tasmanian volunteers who sought advice from a Hobart clinic on lowering blood pressure by non pharmacological means in the latter part of 1988. Blood pressure reduction was measured 12 weeks after entry into study. The economic effects for two groups were analysed separately. For the medicated hypertensives, the benefits were the reduction in cost of anti-hypertensive medication. For the non medicated group, the benefits were the calculated years of life gained because blood pressure had fallen. Costs included travel and time costs of patients. The costs of the clinic were allocated between the medicated and non medicated group according to the number in each group who completed four visits. A discount rate of 5% was used. The best case and worst case assumptions gave $4940 and $5365 per life year saved respectively.

(g) The Sydney 'Quit for life' mass media based campaign ran in 1983. Based on surveys on the population in Sydney and other Australian cities, it was estimated that the 'Quit for Life' campaign led to a 2.8% fall 12 months after the campaign in the numbers smoking in Sydney over and above the decline in the rest of Australia. The 95% confidence interval was 0.9% to 5.1%.

The expenditure was $620,000 and the result was 83,000 fewer smokers in 1984, giving a cost per quitter of $7. Cost per life year saved was calculated using American data which indicates that a smoker who quits adds an average 0.8 discounted life years to his/her life. The discount rate used was 5%.

TABLE 7.13 Comparative overseas cost-utility results for selected programs(a)

Program (reference)	Reported cost/QALY(b) gained in US dollars (year)	Adjusted(c) cost/QALY(b) gained in Aust dollars 1988/89
PKU screening (Bush et al., 1973)	<0 (1970)	0
Post-partum anti-D injection (Torrance and Zipursky, 1977)	<0 (1977)	0
Ante-partum anti-D injection (Torrance and Zipursky, 1984)	1,200 (1983)	2,173
Coronary artery bypass surgery for left main coronary artery disease (Weinstein, 1981)	3,500 (1981)	7,564
Neonatal intensive care, 1000-1499g (Boyle et al., 1983)	2,800 (1978)	8,159
T4 (thyroid) screening (Epstein et al., 1981)	3,600 (1977)	11,463
Treatment of severe hypertension (diastolic $\geq$ 105mm Hg) in males aged 40 (Stason and Weinstein, 1977)	4,850 (1976)	16,773
Treatment of mild hypertension (diastolic 95-104mm Hg) in males aged 40 (Stason and Weinstein, 1977)	9,880 (1976)	34,087
Estrogen therapy for postmenopausal symptoms in women without a prior hysterectomy (Weinstein, 1980)	18,160 (1979)	48,396
Neonatal intensive care, 500-999g (Boyle et al., 1983)	19,600 (1978)	57,112
Coronary artery bypass surgery for single vessel disease with moderately severe angina (Weinstein, 1981)	30,000 (1981)	64,883
School tuberculin testing program (Bush et al., 1972)	13,000 (1968)	68,415
Continuous ambulatory peritoneal dialysis (Churchill et al., 1984)	35,100 (1980)	83,957
Hospital hemodialysis (Churchill et al., 1984a)	40,200	96,156

Notes:

(a) These studies use similar, but not identical, methods. Generally, costs are net health care costs: however, discount rates and preference weights are not completely consistent. Differences in methods should be considered when comparing the relative cost-utility. For details, see original sources.

(b) QALY denotes quality-adjusted life-years.

(c) Adjusted to 1988/89 Australian dollars using the purchasing power parity method (rather than the exchange rate) and health expenditure indexes.

Source:

Table taken from Torrance and Zipursky (1984). Adjustment to 1988/89 Australian dollars calculated by Australian Institute of Health.

benchmark might be, the results of a range of programs where resources are currently being committed. The data in Tables 7.12 and 7.13 illustrate that there are likely to be quite a number of health programs currently being funded in Australia that are less cost-effective than the cervical cancer screening program recommended in this report.

If an economic cost per life year saved of $30,782 for the national program ($13,872 less per life year than the current approach to cervical cancer screening) is considered acceptable value for money, then national population-based cervical cancer screening should continue, but on the revised basis described in this report.

7.3.2 Sensitivity analysis of the cost per life year results

The cost-effectiveness estimate of $30,782 for an organised approach given in Table 7.12 will vary according to the estimate of life years saved, the screening policy adopted (especially in terms of age range and screening interval), utilisation of screening facilities by Australian women, and the cost of screening programs. The cost of associated infrastructure for coordination and evaluation at the Commonwealth-State/Territory level have not been included in the cost per life year estimates but some preliminary financial cost estimates are given in Table 7.1.

An indication of the relative cost-effectiveness of screening at different ages was shown in Table 7.11 and of different intervals in Table 7.9. The relative cost-effectiveness of different estimates for cost and life years saved are shown in Tables 7.14 and 7.15 below. All these tables show the net present value of costs and life years saved for 30 years of operation assuming a growth in participation by women so as to achieve the "Health for All" targets.

The sensitivity analyses in Tables 7.14 and 7.15 indicate that the program cost-effectiveness estimate of $30,782 is a reasonably robust figure in relation to both cost and outcome variations. Table 7.16 provides an indication of the impact of different screening participation rates on both costs, life years saved and average cost per life year saved. Table 7.17 provides an indication of the impact of different discount rates on both costs, benefits, and average cost per life years saved.

TABLE 7.14 Relative cost-effectiveness of a screening program for women 18-69 years (two year screening interval) for different cost estimates of screening and follow-up

Variation in costs	Net present(a) value of total life years saved(b)	Average cost per life year
Base assumption(c)		
Screening	$1,695M	
Diagnosis/management	$1,229M	
Total	$2,924M	$30,782
Variation cost per screen (only)		
- 15%	$2,670M	$28,105
- 10%	$2,755M	$29,000
- 5%	$2,840M	$29,885
+ 5%	$3,009M	$31,674
+ 10%	$3,094M	$32,568
+ 15%	$3,179M	$33,453
Variation cost per follow-up (only)		
- 15%	$2,739M	$28,832
- 10%	$2,801M	$29,484
- 5%	$2,862M	$30,126
+ 5%	$2,985M	$31,421
+ 10%	$3,046M	$32,063
+ 15%	$3,108M	$32,716
Variation cost of <u>both</u> screening and follow-up		
- 15%	$2,485M	$26,164
- 10%	$2,631M	$27,704
- 5%	$2,778M	$29,242
+ 5%	$3,070M	$32,315
+ 10%	$3,216M	$33,853
+ 15%	$3,362M	$35,389

Notes:

(a) All costs and outcome estimates are for the period 1991-2020 using a 5% discount rate.
(b) Net present value of life years saved in these estimates is 95,000 years.
(c) See Table 7.8

TABLE 7.15 Relative cost-effectiveness of a screening program for women aged 18-69 years (two year screening interval) for different estimates of life years saved.

Variation in life years saved	Net present(a) value of total life years saved	Average cost per life year saved(b)
Base assumption(c)	95,000 years	$30,782
-15%	80,700 years	$36,232
-10%	85,500 years	$34,199
- 5%	90,200 years	$32,417
+ 5%	99,700 years	$29,328
+10%	104,500 years	$27,981
+15%	109,200 years	$26,777

Notes:

(a) All costs and outcome estimates are for the period 1991-2020 using a 5% discount rate.
(b) The net present value of total costs is $2,924M.
(c) Refer discussion in Section 7.

TABLE 7.16 Relative cost-effectiveness of a screening program (two year screening interval) for women aged 18-69 years for varying participation rates

Participation scenario	Net present(a) value of total costs	Net present(a) value of total life years saved	Average cost per life year saved
Base assumption(b) Achieve 75% participation by 1995, 90% by 1990 Cap at 90%	$2,924M	95,000 years	$30,782
Scenario One Achieve 70% participation by 1995, 85% by 1990 Cap at 85%	$2,760M	92,700 years	$29,777
Scenario Two Achieve 65% participation by 1995, 80% by 1990 Cap at 80%	$2,592M	90,900 years	$28,519
Scenario Three Achieve 65% participation by 1995, 70% by 1990 Cap at 70%	$2,370M	87,400 years	$27,116

Notes:

(a) All costs and outcomes estimates are for the period 1991-2020 using a 5% discount rate.
(b) Refer discussion in Section 7.1.

TABLE 7.17 Relative cost-effectiveness of a screening program for women aged 18-69 years (two year screening interval) for different discount rates.

Discount rate	Net present(a) value of total costs	Net present(a) value of total life years	Average cost per life year saved
Base assumption: 5%(b)	$2,924M	95,000 years	$30,782
7%	$2,312M	75,800 years	$30,488
10%	$1,702M	56,600 years	$30,052

Notes:

(a) All costs and outcome estimates are for the period 1991-2020.
(b) Refer discussion in Section 7.1.

7.4 FUNDING MECHANISMS FOR A NATIONAL PROGRAM

The following discussion draws on a consultancy report into funding mechanisms for a national cervical cancer screening program that was undertaken for the Screening Evaluation Coordination Unit by Dr J R G Butler of the National Centre for Epidemiology and Population Health at the Australian National University.

7.4.1 Current funding arrangements

In discussing possible funding arrangements for a national cervical cancer screening program, account must be taken of the fact that screening for this disease is already publicly funded in Australia through Medicare and other Commonwealth/State/Territory channels.

Medicare does not normally provide coverage for screening unless specifically directed to do so by the Commonwealth Minister for Health. Coverage for Pap smears has been so directed, but being under Medicare, the benefit is restricted to Pap smears taken by medical practitioners. Medicare also provides coverage for the reporting of a Pap smear under the pathology services section of the Schedule, with reimbursement paid at both a specialist (SP) and non-specialist (OP) rate. Public laboratories which bill Medicare are paid at the OP rate, while virtually all private laboratories bill Medicare at the SP rate. Medicare rebates are also available for services provided in the follow-up and management of abnormal Pap smear results.

In addition to these services funded under Medicare, Pap smears are also taken at a number of publicly funded clinics in various States/Territories (family planning clinics, well women clinics, etc). Some States/Territories have also provided nurse practitioners as alternative Pap smear takers under publicly funded programs. The situation in relation to the funding of Pap smear reporting in the public pathology laboratories also varies from State to State, with some public laboratories billing Medicare directly, while others have separate grant arrangements with the Commonwealth or State governments. Some public hospitals are also involved in Pap smear reporting and in the treatment of women with abnormal results. This is financed by the Commonwealth grants to the States/Territories for public hospitals.

While various funding arrangements exist for the taking and reporting of a Pap smear, no arrangements exist for the ongoing funding of recruitment and associated educational activities, or for evaluation, coordination and monitoring to facilitate quality assurance and cost-effectiveness in all stages of the screening pathway.

7.4.2 Discussion of possible changes in the funding arrangements

There are three reasons for considering change to the current funding arrangements:

TABLE 7.18 Present funding arrangements for cervical cancer screening and some options for change(a)

	Present public funding	Some possible changes
Recruitment	Nil(b)	**Demand side:** (1) Grants to States/Territories for recruitment campaigns (2) Grants to States/Territories for cytology registries (also for monitoring) (3) Use population registers **Supply side:** See Pap smear taking
Pap smear taking	Medicare Public health clinics Public hospitals	(1) Introduce specific Medicare item for screen taking (2) Grants to States/Territories for alternative service options such as nurse practitioners, women's health clinics, etc (3) Grants to States/Territories for general paractitioner education programs
Pap smear reporting	Medicare State pathology laboratories Public hospitals	Fund both public and private labs at the same rate per test for cervix cytology by (1) paying grants to States/Territories for public laboratories calculated with reference to number of smears read (2) having all laboratories claim for each item through Medicare
Management of abnormal results	Medicare Public hospitals	(1) Introduce global fee for management of pre-cancerous lesions (2) Strengthen/establish special clinics
Monitoring, evaluation and coordination	Nil(b) except for Victoria	(1) Pathology laboratory accreditation for national screening program dependent on participation in monitoring/evaluation activities (2) Grants to States/Territories for establishment of cytology registries (3) Grants for establishment of evaluation/coordination infrastructure

Notes: (a) Present funding refers to existing system of service provision excluding pilot projects.
(b) Refers to funding specifically aimed at cervical cancer screening.

1. to provide a funding mechanism for those elements of the screening pathway which are currently unfunded (e.g. recruitment/education, monitoring/evaluation and coordination);

2. to provide funding mechanisms which are supportive of (or at least will not prevent the achievement of) an organised approach to cervical cancer screening as recommended in this report; and

3. to achieve a more cost-effective use of funds currently committed to cervical cancer screening.

Before considering possible changes, it is useful to briefly review the desirable features of an organised national screening program. The essential features are:

1. national coverage to ensure all women have the option of being involved in the program regardless of place of residence;

2. systematic and sensitive methods of encouraging participation by women and notification of results;

3. coordinated mechanisms to ensure women receive appropriate follow-up, assessment, counselling, and management when necessary;

4. appropriate infrastructure to ensure ongoing monitoring, evaluation and coordination of all program activities, to facilitate high quality performance within world standards.

Table 7.18 provides a summary of the present sources of public funds for each component of the screening pathway and lists some options for change.

Recruitment

A major omission from the current funding arrangements is the lack of any coordinated ongoing commitment to improve participation rates in the screening services being provided. This is a serious matter in light of the evidence that two-thirds or more of women who die from invasive cervical cancer have never had a Pap smear. Apart from the funds committed to the pilot projects, there exists no specific public funding or budgetary mechanism for recruitment of women for cervical cancer screening.

Given that the test itself and the associated pathology are already heavily subsidised through Medicare and grants to States and Territories, it is unlikely that there is any significant economic barrier to women having the test. This is substantiated by surveys conducted by the pilot projects of barriers to participation, and of financial costs to women in attending the screening program. Options for funding recruitment should therefore be geared toward the

factors other than economic which operate against women becoming involved in the program.

The options in Table 7.18 have been divided into demand side initiatives and supply side initiatives, with the supply side initiatives being subsumed under the second component of the screening pathway (Pap smear taking).

The demand side initiatives are aimed at women themselves, and would seek to increase the demand by women for the Pap smear. Ideally, the recruitment strategies would be aimed at women who do not currently have Pap smears taken or who are screened infrequently, particularly those in the high risk groups whose attendance would have an important impact on morbidity and mortality.

Grants to the States/Territories earmarked for expenditure on recruitment and associated educational activities have the advantage that they would allow each State/Territory to target the specific groups within their boundaries which they consider are under-screened at present. This funding mechanism allows the States/Territories flexibility to design their programs to suit their own particular circumstances. A condition of Commonwealth funding, however, should be that the State/Territory media campaigns convey easily understood information consistent with the national policy on screening, as well as material to encourage attendance and raise awareness about the Pap smear.

Grants to the States/Territories for cytology registries could also perform an important recruitment function in so far as the registries could be used for inviting women to attend. However, this method of recruitment, like most recruitment strategies, can suffer from the limitation that the women most likely to participate are those already being screened. The registers would, nonetheless, help maximise the long term yield from mass media campaigns, as well as greatly facilitate important monitoring, quality assurance and coordination functions.

Pap smear taking

Pap smear taking already receives public funding through a number of avenues, as outlined in 7.4.1. Options for change in this area include altering the Medicare Schedule to remove any economic disincentives to Pap smear taking by medical practitioners, providing grants to the States/Territories for professional education programs and the funding of a range of supplementary service for taking Pap smears.

Under the present Medicare system, a medical practitioner who provides a consultation for the sole purpose of a Pap smear is reimbursed for 85% of the Schedule fee for that consultation. If the Pap smear is taken as part of a consultation for other reasons, the general practitioner will receive no extra remuneration unless the time or

complexity involved in the consultation allows a change in the item number.

It has been suggested that this may act as an economic disincentive to the taking of Pap smears for some medical practitioners. However, a recent survey (Bowman et al., 1990) of general practitioners in New South Wales found that general practitioners already perceived themselves as the most appropriate providers of cervical cancer screening, already acknowledged their responsibility to initiate Pap smears and did not raise the issue of financial incentive to take the Pap smears as a major barrier. Rather, the general practitioners identified the need for educational programs for both providers and consumers, the need for more female providers and appropriate supplementary services, the need for consensus screening guidelines, and the need for screening registries and recall systems as the most appropriate improvements to increase screening participation rates.

While the issue of financial incentive per se was not nominated by general practitioners, the issue of lack of time was nominated by almost half the sample as discouraging to their taking of Pap smears. This research raises the question of whether both practitioners and patients should be encouraged to dedicate a consultation to the purpose of taking a Pap smear, rather than the test being a secondary feature of a consultation on unrelated matters. On the other hand, a recent study (Cockburn et al 1990) of general practitioner initiated Pap smears, reported that 50% of women who said they would come back later for a Pap smear, failed to do so within the six week period of the study. Available evidence on current practice suggests that the majority of Pap smears taken by general practitioners are taken in consultations arranged for that purpose. In this regard, it should be noted that the financial and economic estimates provided in this report are all based on a separate consultation for the taking of a Pap smear.

A separate Medicare item number for the taking of a Pap smear may have a recruitment effect (in that general practitioners may become more conscious of the importance of Pap smears and organise their time to take them) and may assist in reinforcing national guidelines on screening interval (if the fee for taking a screening Pap smear were payable once every two years for example). The net cost of such a move would depend on a range of factors, including the rebate level set vis-a-vis the general consultation rebate, the extent to which Pap smears are currently being taken during consultations arranged for other purposes, the impact on adherence to screening interval and age guidelines, and the growth rates in screening. Of these factors, the economic data presented in this report suggest that adherence to policy guidelines on interval and age will be the key determinants.

Whether it is desirable to have a separate item number is a matter that requires more discussion than was possible for this report. In the interim, it would be preferable to monitor the extent to which voluntary adherence to the national guidelines is achievable by implementation of the organised approach to screening recommended in this report.

Another possible policy identified in Table 7.18 relates to the provision of funding for education of general practitioners about cervical cancer screening, including the most effective ways of liaising with women (particularly those of ethnic backgrounds or those who react negatively to the issue of a Pap smear being raised), of obtaining an appropriate sample of cells (particularly the endocervical component) and the latest information on the disease. This option may also have an important recruitment effect. The work of Bowman et al (ibid) on the importance of the time constraint also suggests that awareness of the need for cervical cancer screening should be greater among practitioners and women, so that it is given a higher priority within the limited time that is available.

The other option in Table 7.18 relates to the financing of supplementary services. The funding of these services would be based on evidence from the pilot projects that current forms of service delivery are a barrier to participation for some women and that, by increasing the availability of a range of services (female nurse practitioners, Aboriginal health workers, etc) more women who are unscreened or under-screened will be induced to attend. The significant contribution these supplementary services can make is discussed in Section 6.4.

Pap smear reporting

Women are currently covered against most or all of the costs of cytology arising out of the Pap smear, either through Medicare or through the processing of the Pap smear in a public laboratory which does not charge. The Commonwealth does provide some financial support for public laboratories but the arrangements differ from one State/Territory to the next.

One of the recommendations in the 1987 Report of the 'AHMAC Working Party on the Development of a National Cervical Cancer Screening Strategy' was that an economic costing of Pap smear reporting be undertaken. Four States were approached and all agreed for their public pathology laboratory to cooperate with the Screening Evaluation Coordination Unit in the costing initiative. Three of the four laboratories are exclusively block grant funded.

Table 7.19 provides a summary of the resulting cost estimates for Pap smear reporting in the public laboratories compared with the Schedule items under Medicare. A more detailed report is provided in Appendix 5. The average cost per Pap smear in 1988/89 prices for the public laboratories is $10.20, ranging from a low of $9.78 to a high of $10.71.

Private laboratories, on the other hand, are currently receiving $19.40 per Pap smear report (more if they charge higher than the Schedule), or $16.50 if they bulk bill.

TABLE 7.19 Estimates of the reporting costs per Pap smear in four public laboratories compared with Medicare items (1988/89 prices)

	Cost estimates $	Medicare Schedule item $	Medicare Rebate (85%) $
Lab 'A'	9.78	19.40	16.50 2338 (SP)
Lab 'B'	9.95		
Lab 'C'	10.71	14.55	12.40 2339 (OP)
Lab 'D'	10.37		
Average	10.20		

Most public laboratories report that they are losing market share to the private laboratories. The data presented in Table 5.6 illustrate this. Between 1985 and 1989 the number of Pap smears reported in the grant funded public laboratories (Victorian Cytology Service, Queensland Cytology Service, and the Institute of Medical and Veterinary Science in South Australia) declined by 10%, while the number reported by the private laboratories increased by 58%.

There are various issues involved in this loss of market share, but one of the major factors is the ability of the private laboratories to use their higher reimbursement rate under Medicare to offer faster turnaround times by funding special pick-up/delivery services, special Pap smear collection kits, and by paying salaries well in excess of the award rates to experienced staff trained in the public laboratories.

Quite apart from the financial and economic implications considered previously (refer Table 7.4 and Table 7.8), careful consideration also has to be given to the consequences of a declining public sector for the important teaching, research and quality assurance roles currently undertaken by the public laboratories.

A major option for change in the funding arrangements for Pap smear reporting is to reduce or eliminate the

differential level of funding between the private and public laboratories. If public laboratories were given, say, $12.40 a Pap smear, they would be in a position to reduce turn around time and offer a more competitive service, while maintaining their important research and teaching roles.

A uniform fee for Pap smear reporting could be implemented in several ways: through the Medicare Schedule; by calculating a grant to each laboratory (both public and private) which is based on the number of Pap smears reported; or by continuing a mixture of the two approaches as at present.

The use of Medicare may be a simpler option to administer than grant payments (particularly for the 200 odd private laboratories involved in cervical cytology) and has the additional advantage that each time a woman has a Pap smear, a pathology claim is raised which could provide the basis for ensuring that this item is used in accordance with policy guidelines.

One option for implementing the change via the Medicare Schedule would be to introduce a new item into the Schedule for a screening (as opposed to a diagnostic) Pap smear, with the new item being claimable only once each screening round. Further cytology undertaken for diagnostic purposes would be claimed under the existing pathology item numbers.

Any new item could be constrained to cover Pap smear reporting provided by laboratories accredited for participation in the national screening program so that an important link is established between funding and a key quality control mechanism. The discussion in Section 7.5 highlights the real difficulties, however, associated with determining whether a Pap smear was "diagnostic" or "screening" in nature. If this change were introduced, it would seem preferable to monitor the number and growth in "diagnostic" Pap smears as opposed to "screening" Pap smears before taking any action to ensure de facto screening did not take place under the remaining diagnostic Pap smear item.

The Committee has considerable misgivings about this approach. Pap smears taken as part of the management of women with cytological abnormalities can be clearly defined as diagnostic Pap smears. On the other hand, for the taking of the initial Pap smear the absence of a unique set of symptoms which apply only to women who require diagnostic Pap smears means that the distinction between a screening and diagnostic Pap smear is largely a matter of clinical judgement. It must be anticipated that a large proportion of Pap smears will be considered diagnostic Pap smears. A regulatory approach to enforcement of screening interval would encounter a number of difficulties in determining eligibility for payment at the point of Pap smear taking and at the laboratory, as well as professional and consumer opposition.

Management of abnormal results

The management of abnormal results already receives public funding through Medicare and via the Commonwealth/State public hospital financial arrangements. Adherence to the economic concept of paying for outputs and not inputs is very difficult in the context of cervical cancer screening, as the original Pap smear that gave rise to the suspicion of an abnormality and the confirmation of diagnosis via colposcopy and associated pathology, would in most circumstances be undertaken by different service providers. The potential to improve the existing fee-for-service payment scheme is therefore limited.

At the same time it is possible that follow-up of some women with minor abnormalities may be excessive. To the extent that this occurs, the costs of the program will be excessive under conventional fee-for-service payment. One funding option to address this would be to introduce a global fee for the management of lesions up to a particular level of severity. The Royal Australasian College of Obstetricians and Gynaecologists could be approached to develop a treatment protocol which would be used in setting the global fee. It is acknowledged that the College would be unlikely to support the implementation of a global fee for this purpose. The College may feel that appropriate management of all the various cervical abnormalities detected by screening involves such a variable range of procedures that a global fee was not practical.

A different and preferred option at this stage would be to fund the development of appropriate management protocols for women with minor abnormalities, and to encourage appropriate management by making the results available to the medical community in a constructive and positive way.

A second area of concern, given the disparate nature of service provision in cervical cancer screening, is to build sufficient links between screening and follow-up to ensure that women receive appropriate counselling, assessment, and management when necessary. This is best achieved either through the funding of cytology registries (one of the important functions of which is to monitor timely follow-up) or as a requirement for the accreditation of pathology laboratories for participation in the screening program (as suggested above). Currently there is considerable variation among laboratories in the extent to which they monitor follow-up of abnormal Pap smear results.

Monitoring, evaluation and coordination

The second major omission from current funding arrangements is the lack of any budgetary mechanism or infrastructure to ensure ongoing coordination, monitoring and evaluation. These functions could be adequately financed by a redirection of existing resources. Their implementation is likely to lead to a more than proportionate increase in the number of cases detected, thus reducing the cost per life

year saved of the screening program. Studies of the cost-effectiveness of cervical cancer screening usually assume that the program is optimally organised and concentrate on the cost per life year saved which is attainable under these conditions. Under this assumption, the accuracy of the test itself, the incidence of the disease and various other considerations become important determinants of the cost per life year saved. But more recent evidence has indicated that organisational inefficiencies can reduce the economic efficiency of the program (MacGregor and Teper, 1978; Lynge et al, 1988).

A screening program which does not coordinate and monitor the usage of the test can result in the test being taken too frequently by relatively low risk women with the consequence that the cost per life year saved which is actually achieved may be in excess of that which is attainable. Commitment of resources to counter these organisational inefficiencies will yield important benefits, both in terms of the outcome of the program (life years saved) and the cost per unit of that outcome (cost per life year saved).

Chapter 8 of this report describes an appropriate coordination, monitoring and evaluation infrastructure necessary to ensure that all the disparate elements of a national cervical cancer screening program are appropriately drawn together. It is vital that this coordination, monitoring and evaluation infrastructure be closely supported by ongoing funding mechanisms.

7.4.3 Conclusions

1. There are three reasons for suggesting change to the current funding arrangements for cervical cancer screening:

   (a) to provide a funding mechanism for those elements of the screening pathway which currently lack coordinated ongoing funding (e.g. recruitment/education, monitoring/evaluation and coordination);

   (b) to provide funding mechanisms which (along with accreditation and quality assurance) promote the achievement of a high quality and well integrated screening and assessment service; and

   (c) to achieve a more cost-effective use of current and future funds committed to cervical cancer screening.

2. It is unlikely that there is any significant economic barrier to women having Pap smears. Options for funding recruitment should be geared toward the non-economic factors which operate against women becoming involved in screening (supplementary services for Pap smear taking, remoteness, registries, education, etc).

3. Having regard to Dr Butler's consultancy report and to the discussion of possible changes to the current funding arrangements in 7.4.2 above, the following approach is suggested for consideration by Commonwealth and State/Territory governments:

(a) that the Commonwealth provide grant funding to the States/Territories to contribute towards the cost of introducing:

- regular and coordinated cervical cancer screening recruitment campaigns;
- regular and coordinated public and professional educational campaigns;
- a range of supplementary services where needed;
- a reminder system for women who are overdue for their next Pap smear; and
- appropriate coordination, monitoring and evaluation infrastructure, including the establishment of cervical cytology registries.

(b) that the provision of Commonwealth grant funding for the above be contingent upon Commonwealth approval of implementation plans submitted by State/Territory governments for the organised approach to cervical cancer screening recommended in this report;

(c) that the Commonwealth give consideration to providing this grant funding on a matched basis to the States/Territories for dispersal in accordance with the agreed implementation plans;

(d) that the Commonwealth fund all costs associated with the proposed National Cervical Cancer Screening Advisory Committee and its Secretariat (see Chapter 8);

(e) that a condition of Commonwealth funding be that the State/Territory media campaigns convey easy to understand information consistent with national policy on screening, as well as material to encourage attendance and raise awareness about the Pap smear;

(f) that public funding of both public and private laboratories be linked to their satisfactory participation in any quality assurance and monitoring/evaluation activities built into the organised national screening program;

(g) that public funding of both public and private laboratories be linked to their using national policy guidelines for the rescreening interval when recommending rescreening, at least for women with normal Pap smears;

(h) that in order to ensure the continued viability of high quality public sector laboratories, a funding level be provided so as to enable them to provide a comprehensive, timely and efficient service to practitioners.

4. Funding currently provided for cervical cancer screening should be sufficient to fund the organised approach recommended in this report (including funding the new areas of recruitment/education and monitoring/ education) until 1994, at which time the anticipated growth in screening participation rates should have caught up with the anticipated savings from introducing the organised approach.

Savings could arise from introduction of the recommended organised approach in relation to:

(a) the interval at which women are screened;

(b) the age group which is screened;

(c) laboratory costs; and

(d) the investigation, follow-up and management received by screened women with abnormal reports.

7.5 OPTIONS FOR IMPROVING COST-EFFECTIVENESS

Conceptually, cost-effectiveness may be improved by reducing cost for the same level of effectiveness, increasing effectiveness for the same cost, or by changing cost and effectiveness together in such a way that the ratio of cost to effectiveness is reduced. For example, a change in the organisation of screening may result in a substantial reduction in cost with an associated relatively smaller reduction in effectiveness. While this may generate concerns about reduced effectiveness, such a change may result in making available resources which could be used much more effectively in other areas of cervical cancer screening. It should be noted that in this context effectiveness refers to reduction in morbidity and mortality from cervical cancer.

This section examines the merits of various options for improving cost-effectiveness in the three areas of screening which account for current expenditures by government:

- participation by women in screening;
- the costs to government of Pap smear reporting by laboratories;
- referral for further investigation and management.

The options presented are not mutually exclusive and may indeed be complementary. Potentially feasible options were considered to ensure that the Committee's views on them are available to governments, even though not all the options are recommended by the Committee. It should be noted that, during discussions, some Committee members considered that some of the options were untenable.

7.5.1 Participation by women in screening

The cost-effectiveness could be improved by: reducing screening among women who are screened frequently, increasing the frequency of screening among women who are screened infrequently, raising the age at which screening commences and by screening women who have never been screened.

The available options include:

1. Developing, expanding and integrating recruitment methods (including a reminder system) and providing supplementary services for Pap smear taking;
2. Developing and promoting a voluntary uniform policy on two yearly screening in all professional and public education;
3. Enforcing a uniform policy on screening interval by compulsory restriction on the frequency of payment from public funds for the reporting of screening Pap smears.

4. Developing and promoting a voluntary uniform policy which has a higher age for commencement of screening than 18 years.

5. Enforcing a uniform policy on lower age to commence screening by compulsory restriction on payment from public funds for reporting Pap smears from women younger than prescribed limit.

Option 1

Developing, expanding and integrating recruitment methods (including a reminder system) and providing supplementary services for Pap smear taking.

Advantages	Disadvantages
Generally, a high degree of community and professional acceptance.	Requires funds.
Large impact among under-screened and high risk groups of women.	May lead to over-screening of already well screened groups.
Should decrease the tendency to over-screen to compensate for lack of a reminder system.	Some recruitment methods may not have a high degree of acceptance among some professionals (e.g. supplementary services).
While increasing costs, is likely to preferentially improve screening among under-screened and unscreened women, thereby improving cost-effectiveness.	

Comments

Needs skilful development of educational resources to ensure they are effective in reaching and motivating under-screened women.

Existing resources devoted to cervical cancer screening could be re-directed to fund this option. Table 7.1 indicates that by 1995 approximately $14.3M would be required (or 9% of the program's estimated annual cost). This includes $13.0M for recruitment/education and $1.3m for for State/Territory registries and similar activities. Economic evaluation indicates that an organised approach (which is based on implementation of this option) is clearly more cost-effective than the current approach (refer Sections 7.2 and 7.3) yielding a net saving in cost per life year added of $13,872.

Option 2

Developing and promoting a voluntary uniform policy of two yearly screening in all professional and public education.

Advantages	Disadvantages
Significant savings to women of $60M per year by 1995 compared with annual screening (and up to $669M over a 30 year program, see Table 7.8) except where they choose to have more frequent Pap smears.	Acceptance of this interval is conditional upon comprehensive reminder systems and systems for monitoring accuracy of tests.
Eliminates confusion.	The interval selected may be unacceptable to some professional and consumer groups.
Aids rational planning.	
Facilitates uniform distribution of Pap smears with major increase in cost-effectiveness compared to the current situation (refer Sections 7.2 and 7.3).	May be difficult to implement comprehensively unless incentives provided.
Savings to governments of $151M per year by 1995 compared with annual screening (and to $2129M over a 30 year program) some or all of which could be re-directed to other parts of the screening pathway.	Resultant reduced Pap smear frequency may be associated with a very small number of cases of cervical cancer which otherwise may have been prevented.

Comments

Generally feasible and effective. A cooperative approach involving consultation with the professions would be quicker and cheaper to institute than that proposed in option 3. Table 7.4 indicates that financial savings resulting from the uniform implementation of a two year interval (as part of an organised approach to screening) should allow the "Health for All" targets to be achieved with no additional expenditure requirements until 1994 or later.

To the extent that uniform implementation is not achieved or is achieved more slowly with a voluntary approach, the potential savings will be diluted, and additional funding to meet the growth in participation will be required earlier. Table 7.9 shows clearly that a two year interval is significantly more cost-effective than annual screening (the basis on which much current screening is undertaken). Under an organised program, annual screening may result in an additional 16 cancers per year being diagnosed compared with two yearly screening. The marginal cost-effectiveness of this over a 30 year program would be $210,256 per life year added or $2.5 million per additional death averted. Comparison of Table 7.7 and 7.8 indicates that uniform two

yearly screening is also an important economic improvement on the current situation.

Option 3

Enforcing a uniform policy on screening interval by compulsory restriction on the frequency of payment from public funds for the reporting of screening Pap smears.

Advantages	Disadvantages
Significant savings to women as per Option 2 (above) except where they choose to have more frequent Pap smears.	Administratively very difficult to implement, especially in determining eligibility for payment at point of Pap smear taking and at laboratory.
Facilitates uniform distribution of Pap smears.	Resultant reduced Pap smear frequency may be associated with a very small number of cases of cervical cancer which otherwise would have been prevented.
Aids rational planning.	Will require a parallel payment system for women having diagnostic Pap smears or in whom more frequent Pap smears can be justified because of past history.
Savings to governments as per Option 2 (above) some or all of which could be re-directed to other parts of the screening pathway.	Likely to be strongly challenged by professional and consumer groups.
	Extreme difficulty in distinguishing between screening and diagnostic Pap smears.
	Likely to result in women attending public hospitals for Pap smears. (Public hospitals which report Pap smears on-site pay for this service out of their global budget.)

Comments

Likely to be strongly challenged by professional and consumer groups on the basis that it will be extremely difficult to administer and may threaten standards of patient care.

Considered unworkable by many Committee members because of the difficulty in determining eligibility for payment and the need for parallel systems for screening and diagnostic Pap smears.

Main economic difference to Option 2 will be the extent and speed with which uniform implementation of a two year interval is achieved under a voluntary vis-a-vis a regulatory approach. A regulatory approach may also involve additional administrative expense to achieve effective enforcement.

Option 4

Developing and promoting a voluntary uniform policy which has a higher age for commencement of screening than 18 years.

Advantages	Disadvantages
Significant savings to young women of $10.0M per annum by 1995 if screening commenced at at age 25 years (and up to $156M over a 30 year program).	Likely to be strongly challenged by professional and consumer groups.
Reduces unnecessary interventions to young women.	Young women may attend hospitals for Pap smears.
Savings significantly greater than reduced effectiveness thereby improving cost-effectiveness.	May be associated with a small number of cases of cervical cancer which otherwise would have been prevented.
Savings to governments of $34.7M per annum by 1995 if screening commenced at age 25 years (and up to $535m over a 30 year program).	Screening younger women has the important benefit of detecting other abnormalities and reinforces health promotion.

Comments

Should be the subject of review, consultation and informed debate. Tables 7.10 and 7.11 illustrate that age for commencement of screening has very significant cost-effectiveness implications. Including the 18-24 year age group may result at best in an additional 33 cancers per year being diagnosed. The marginal cost-effectiveness of this over a 30 year program would be $767,777 per life year added or $16.5 million per death averted.

The high proportion of younger women whose abnormalities are likely to regress spontaneously if left untreated results in a relatively large amount of diagnosis and management which fails to produce a substantial impact on mortality.

Option 5

Enforcing a uniform policy on lower age to commence screening by compulsory restriction on payment from public funds for reporting Pap smears from women younger than prescribed limit.

Advantages	Disadvantages
Significant savings to young women (as per Option 4).	May be associated with a small number of cases of cervical cancer which otherwise would have been prevented.
Savings to governments (as per Option 4).	
Savings greater than reduced effectiveness thereby improving cost-effectiveness.	Strong community and professional antagonism likely.
Reduces unnecessary interventions to younger women	Screening young women detects other abnormalities and reinforces health promotion.
	Young women may attend public hospitals for Pap smears.

Comments

Premature at this time in view of the lack of public and professional debate on this issue. Professional groups will be concerned about the existence of a new aggressive form of cervical cancer in the younger age groups which is not reflected in the case control and cohort studies on which the outcome estimates are based.

Economic and financial implications are set out in Option 4. As with the screening interval, the main difference between a voluntary and a uniform approach is the speed and extent of implementation and the additional costs of enforcement, and the likely cooperation of professional and consumer groups.

7.5.2 The cost to governments of reporting Pap smears by laboratories

The cost to governments for Pap smear reporting could be reduced.

The available options are:

1. Lower the pathology SP (private sector) rebate for Pap smear reporting towards the OP (public sector) rate.

2. Increase the level of funding provided to grant-funded public sector laboratories to the OP rebate level of the Medicare schedule.

3. Replace the Medicare rebate for Pap smear reporting with block grants which are proportional to the volume of Pap smears reported.

4. Establish a new Medicare item for reporting screening Pap smears and confine the existing item to diagnostic Pap smears.

5. Invite laboratories to tender to report Pap smears and provide associated services of training and monitoring.

6. Reduce the frequency of over-screening or reduce screening among young women.

Option 1

Lower the pathology SP (private sector) rebate for Pap smear reporting towards the OP (public sector) rebate.

Advantages	Disadvantages
Savings to the Commonwealth of up to $14M per screening cycle.	Reduced profitability of private laboratories, with consequent opposition.

Comments

As part of the national evaluation, the Screening Evaluation Coordination Unit was asked to carry out an independent costing of cervical cytology in four government pathology laboratories (Queensland, Victoria, New South Wales and South Australia). This study is reported in Section 7.4 and Appendix 5. Table 7.19 indicates that the average cost of reporting a Pap smear in 1988/89 was $10.20, compared with the Medicare SP rate of $19.40 (rebate $16.50) and the OP rate of $14.55 (rebate $12.40).

The cost-effectiveness results for the recommended program incorporated an estimate of $12.00 for Pap smear reporting based on the study estimate of $10.20 plus an additional loading to inflate the estimate to 1989/90 prices and to improve the services that public laboratories could afford to offer. If the rebate remains at $16.50 (90% of claims on Medicare are at the SP rate) the cost per life year of the organised program increases from $30,782 to $32,160.

Option 2

Increase the level of funding provided to grant-funded public sector laboratories to the OP rebate level of the Medicare schedule.

Advantages	Disadvantages
Ensures training facilities for cytotechnologists and cytopathologists.	Requires additional funding which may or may not be offset, depending on extent to which government laboratories are able to maintain their market share.
Savings to government of up to $14M per screening cycle if grant-funded labs retain or attract Pap smears which otherwise would be reported in private sector labs.	
Enhances social equity by providing access to labs which do not charge a patient moiety.	
Would improve the acceptability of block grants as a funding mechanism.	

Comments

For reasons of social equity, it is essential that there be laboratories which do not charge a patient moiety.

Grant-funded public laboratories currently receive less than the OP rebate. The study by SECU suggests $12.40 would closely approximate current costs plus a margin to allow government laboratories to improve their service (i.e. improve turn around time, offer Pap smear collection kits, etc.) while maintaining their research and training roles. Competitive wage/salary levels will remain a key problem for government laboratories in retaining trained staff.

If the volume of Pap smears reported in grant funded public sector laboratories continues to decline, an alternative system for training cytotechnologists and cytopathologists will be needed. This will be expensive.

Note the financial and economic analysis of the organised approach in the report assumes a cost of $12.00 for Pap smear reporting.

Option 3

Replace the Medicare rebate for Pap smear reporting with block grants which are proportional to the volume of Pap smears reported.

Advantages	Disadvantages
Reduces administrative overheads for laboratories and Health Insurance Commission.	Loss of potential option to use Health Insurance Commission data base for monitoring and selective invitations.
Provides a means of implementing a uniform fee for reporting Pap smears.	Requires a replacement administrative structure (there are some 200 private labs involved in cervical cytology).
Provides a means of placing an annual cap on expenditure.	Opposition likely due to previous experience of public labs with block grant funding which has restrained their ability to offer a competitive service.

Comments

It is unclear whether the perception that block grant funding is associated with reduced services is accurate in all cases, or whether block grant funding has led to reduced services only in some instances.

Dr Butler's consultancy report (in Volume 2) explores the advantages and disadvantages of grant funding from an economic perspective.

Option 4

Establish a new Medicare item for reporting screening Pap smears and confine the existing item to diagnostic Pap smears.

Advantages	Disadvantages
Provides a means of implementing a uniform fee for the reading of "screening" Pap smears.	Extreme difficulty in distinguishing between "screening" and "diagnostic" Pap smears.
Payment could be linked to accreditation.	May lower the standard of reporting for "screening" Pap smears.
Payment could be used to re-inforce policy guidelines on age and interval.	Probable expansion in proportion of all Pap

	smears which are considered to be "diagnostic" Pap smears.
	Extremely unlikely to gain professional acceptance.
	May cause additional expense to women where laboratories charge above the rebate.

Comments

In the absence of a unique set of symptoms which apply only to women who require diagnostic Pap smears, the classification of Pap smears as "screening" or "diagnostic" is artificial and is very unlikely to be successful.

Option 5

Invite laboratories to tender to report Pap smears and provide associated services of training and monitoring.

Advantages	Disadvantages
May improve likelihood of potential savings to women and governments.	Will require an administrative framework.
One way of ensuring Pap smear reporting, monitoring and training is implemented subject to pre-agreed cost and terms.	Unlikely to be acceptable to public and private sector laboratories.
Provides a means of implementing a uniform fee with a cap on expenditure.	May lead to monopoly situations.

Comments

Is an important option for implementing an organised approach to screening that individual State/Territories might wish to consider.

Option 6

Reduce the frequency of over-screening or reduce screening among young women.

The advantages and disadvantages of these options are presented in Section 7.5.1.

Comments

Pap smear reporting is estimated to cost approximately 17% of the annual total financial expenditure by governments on cervical cancer screening (refer Table 7.1) and is therefore an important area to address in ensuring cost-effective policies are adopted.

7.5.3 Referral for further investigation and management

Reducing the proportion of women with minor abnormalities who are referred for further investigation has a substantial potential to reduce cost with little impact on the effectiveness of cervical cancer screening. Apart from reducing the referral rate, other options are available for reducing the cost of managing women who are referred because of cytological abnormalities.

The available options are:

1. Develop and promote standardised management of minor abnormalities.
2. Governments to fund continuing education for clinicians in the management of women with abnormal cervical cytology.
3. Restrict the level of cytological abnormality which can be investigated under Medicare.
4. Change the Medicare fee structure to replace rebates for individual services with a global fee for case management which is lower than the present average fee.
5. Establish new and strengthen current centres for assessing and managing women with cytological abnormalities.
6. Provide designated funds as the sole source of public funding for the management of cytological abnormalities.

Option 1

Develop and promote standardised management of minor abnormalities.

Advantages	Disadvantages
Professional acceptance more likely.	Lack of comprehensive Australian data on outcome of minor abnormalities.
	Policy may not reduce proportion of women

being referred, with consequent lack of impact on cost-effectiveness.

May reduce costs to government, part or all of which could be redirected to other parts of the screening pathway.

Varying standards of Pap smear reporting may undermine clinical confidence of referring doctors in the protocols.

Reduced anxiety, inconvenience and co-morbidity to women who are not investigated and suffer no adverse consequences.

Comments

Registries and reminder systems would strengthen acceptance.

If this option led to a 15% reduction in the costs of follow-up and management (a conservative estimate), then by 1995 the potential saving to government would be $10.7 million per annum (or a discounted saving of $185 million over a 30 year program). The potential saving to women of a 15% reduction would be $2.1 million per annum (or a discounted saving of $30 million over a 30 year program).

Option 2

Governments to fund continuing education for clinicians in the management of women with abnormal cervical cytology.

Advantages

May reduce the number of women receiving unnecessary management.

Would reinforce standard management (see Option 1 above).

Disadvantages

Requires additional funding.

Comments

The impact on cost of management could be minimal unless closely linked with Option 1. Would require skill in the delivery of the program to gain professional acceptance.

Option 3

Restrict the level of cytological abnormality which can be investigated under Medicare.

Advantages

Reduced anxiety, inconvenience cost and co-morbidity to women who are not investigated and suffer no consequences.

Disadvantages

Likely to be unacceptable to professional and consumer groups.

Reduced Commonwealth cost, all or part of which may be redirected to other parts of the screening pathway.	A very small proportion of women with important abnormalities may be overlooked. Women may have to pay more if they elect to receive management for lesser abnormalities in the private system. Places additional pressure on laboratories and clinicians. Would probably lead to upgrading of diagnoses (classification creep). Women may seek treatment in public hospitals.

Comments

Likely to be strongly challenged by professional and consumer groups as it may threaten standards of patient care. An indication of the possible financial and economic savings are set out under Option 1 above. States and Territories may see this option as a way of transferring the financial burden of funding services from the Commonwealth to them.

Option 4

Change the Medicare fee structure to replace rebates for individual services with a global fee for case management which is lower than the present average fee.

Advantages	Disadvantages
Reduced cost to the Commonwealth. May reduce average number of procedures per woman, especially more sophisticated, high cost procedures. Reduced anxiety, inconvenience and co-morbidity to women who are subject to fewer procedures and suffer no adverse consequences.	Very unlikely to gain professional acceptance. May cause additional expense to women where doctors charge above the global fee. Difficult to accommodate wide range of variation in procedures which would be required to treat individual women. Possible under-servicing.

	Payment difficulties where treatment undertaken by several clinicians.

Comments

The Royal Australian College of Obstetricians and Gynaecologists would need to be involved in the development of a treatment protocol which would be used to set the global fee. The College is very unlikely to support this Option or be prepared to be involved in its implementation. The College is likely to feel that appropriate management of all the various abnormalities detected by screening involves such a variable range of procedures that a global fee is not practical.

Option 5

Establish new and strengthen current centres for assessing and managing women with cytological abnormalities.

Advantages	Disadvantages
Develops a high level of expertise.	Requires additional funding.
Facilitates modification of management protocols on the basis of local data.	Possible limited access for isolated women.
May reduce cost while improving effectiveness.	Some women may prefer existing arrangements.
Professional support is likely.	

Comment

The expansion of these centres may result in cost shifts between the Commonwealth and the States/Territories, with the direction of the cost shifts dependent on the method of funding. Thus, close attention would need to be given to the method and level of funding.

Option 6

Provide designated funds as the sole source of public funding for the management of cytological abnormalities.

Advantages	Disadvantages
May reduce Commonwealth costs.	Difficult to administer.
May reduce anxiety, inconvenience and co-morbidity to women with minor abnormalities.	May be insufficiently flexible to respond to changing disease patterns.

Reduces administrative overheads in processing claims. Could be used in conjunction with other options.	Requires establishment of a coordinating body for distribution of the funding. Would be opposed by professional and consumer groups.

Comment

The level of funding would need to be responsive to changes in the proportion of women who require management due to variations in the overall level of morbidity, as well as regional and local variations in morbidity, and to changes in recommended methods of management. The method of distribution of this funding would require careful consideration. For example, designated funding would provide an effective means of funding the management centres proposed under Option 5.

Opposition to this Option would be inevitable if the resultant range of types of services for management were less than currently available and if this option put a cap on the funding available for management. However, by placing a cap on funding, it could also provide a mechanism for restricting the level of cytological abnormality which was investigated (as intended by Option 3) if the method of distribution of funding was efficient.

The current approach to cervical cancer screening and an overview of options for improvement are presented in Table 7.20.

TABLE 7.20 Summary of current arrangements and options for improving cervical cancer screening

Program element	Current approach	Options for change	Improvement anticipated
Structure	Spontaneous, largely initiated by women and doctors	Organise and coordinate	Improved effectiveness with minimal additional cost
Coverage of target population	Sporadic, untargeted; overscreening of young and women of higher socio-economic status, underscreening of older, Aboriginal and non-English speaking women	Encourage general practitioner recruitment Targeted promotion programs Back-up State/Territory reminder systems using cytology registries Examine use of population registers for invitation	Improved screening among unscreened and underscreened women, with substantial increase in effectiveness of screening
Age range to screen	Variation in guidelines and policies between States and Territories	Nationally agreed policy Restrictions in Medicare rebates	Reduced confusion Improved cost-effectiveness
Screening interval	Wide variation in guidelines and policies between States and Territories	Nationally agreed policy Restrictions in Medicare rebates	Reduced confusion Reduced excessive screening and follow-up/management Improved cost-effectiveness
Services for taking Pap smears	Largely via GPs; some via Family Planning Association and public hospitals	Improve access to supplementary services and access to female Pap smear takers	Improved screening among unscreened and underscreened women Improved cost-effectiveness
Laboratories for reporting Pap smears	Public and private labs, with declining public labs	Change differential between funding of public and private labs to assist public labs to provide free service and to adequately train personnel	Social equity of free Pap smear reporting in public labs Maintain training of cytotechnologists and cytopathologists Improved cost-effectiveness
Quality assurance of laboratory reporting	Limited in scope No comprehensive assessment of day-to-day reporting	Develop and promote voluntary participation in monitoring accuracy of day-to-day reporting Link accreditation for public funding to satisfactory participation in monitoring of accuracy	Improve quality of Pap smear reporting Provision of a rational basis for setting the rescreening interval and age to commence screening

TABLE 7.20 continued Summary of current arrangements and options for improving cervical cancer screening

Program element	Current approach	Options for change	Improvement anticipated
Management of women with abnormalities	Large private practice component with fee for service No standardisation of management Possible over-management of minor abnormalities	Develop standardised management Fund continuing education for clinicians Establish/strengthen specialised treatment centres Alter funding arrangements to reduce expenditure	Reduced proportion of women requiring treatment Reduced number of procedures per woman Develops high level of expertise Reduced cost to women and governments
Monitoring of screening program	Nil except in Victoria	State/Territory cytology registries (or similar monitoring activities by by labs where feasible)	Better targeting of resources to maximise effectiveness and cost-effectiveness

8. IMPLEMENTING AN ORGANISED APPROACH TO CERVICAL CANCER SCREENING IN AUSTRALIA

8.1 ORGANISED VERSUS OPPORTUNISTIC CERVICAL CANCER SCREENING

The screening system which Australia adopts can be either opportunistic or organised, or a combination of the two.

The available options at this time include:

Option 1:

Implement a new system of screening

A range of new screening systems could be contemplated. For example, the delivery of cervical cancer screening could be organised along the lines of the proposed system for mammography screening with all Pap smears to be taken in defined centres, all abnormalities to be managed in specialised assessment centres and block grant funding of services for taking and reporting on Pap smears.

The Committee believes that such a totally new system for cervical cancer screening is unnecessary and undesirable. General practitioners are seen as appropriate and acceptable providers of Pap smear services by the majority of women. The general practitioner has a key role to play in recruiting women, providing screening services and in counselling women with abnormalities. This option is likely to be strongly resisted by women and clinicians.

Option 2:

No change: continue with the current arrangements

Under current arrangements, most Pap smears are taken by general practitioners and are reported in either public or private laboratories. While these arrangements are currently preventing around half of the cases of cervical cancer that would occur in the absence of screening, they are inefficient in reducing the burden of cervical cancer and excessively expensive. The ongoing morbidity and mortality from cervical cancer are clearly a concern given the evidence of better outcomes from programs in other countries.

This option is not recommended by the Committee.

Option 3:

Augment existing screening with an organised approach

This is the preferred option of the Committee. The recommendations of the Committee (Chapter 1) outline the minimum modifications to the current system which appear essential if an effective and efficient organised program is to be implemented. The recommendations are comprehensive and

address all aspects of the screening pathway.

In conceptual terms, the Committee believes that the screening program is most appropriately developed and delivered at a State/Territory level, with national policy development and national monitoring. This is largely in line with current arrangements for the delivery of health services in Australia. General practitioners would continue to be the main providers of Pap smear services, and Pap smears would continue to be reported in public and private laboratories.

Responsibility for the implementation and operation of the organised approach should lie with governments. Currently there is no organisation or person with these responsibilities, either at a State/Territory or Commonwealth level, nor is there an ongoing budget for activities other than those directly related to screening and the provision of clinical services.

8.2 RATIONALE FOR NATIONAL COORDINATION

National coordination and policy development is an essential component of an organised approach to cervical cancer screening in Australia for the following reasons:

- State/Territory or regional differences in screening policies currently make effective public and professional education difficult. For example, comments or viewpoints in the national media which are relevant to the screening policies of one State or Territory create confusion and undermine different screening policies in other States/Territories. This is particularly evident in discussions about the rescreening interval.

- The Commonwealth pays an increasing amount for cervical cancer screening but currently has no avenue for influencing screening policies, apart from politically hazardous restrictive or coercive measures. Representation on a national advisory committee would provide an important avenue for Commonwealth input.

- The lack of a national approach to cervical cancer screening reduces the ability to monitor trends and analyse issues because of the small numbers inherent in any State/Territory analysis. For example, recent issues which have proved difficult to clarify at a State/Territory level include rapid onset cancer, a possible changing incidence of adenocarcinoma, and the role of an endocervical component in assessing the adequacy of sampling. Each of these examples has resulted in calls for annual screening.

- States/Territories have no power to accredit laboratories but, in promoting cervical cancer screening to women and practitioners, are seen to be endorsing the quality of the laboratories within the State/Territory. The National Association of Testing Authorities is unlikely to be prepared to refuse accreditation to any laboratories without the backing of a recommendation from a national body.

- National coordination mechanisms would provide a clearing house for information and educational resources on issues of relevance to other States/Territories e.g. information on nurse practitioners, promotional materials for women of non-English speaking background, strategies to promote screening among Aboriginal women. This would avoid costly duplication of resources and facilitate easy dissemination of experiences.

8.3 NATIONAL RESPONSIBILITIES

The following functions should be performed at the national level:

- promoting an organised approach to cervical cancer screening by all States and Territories;
- reviewing and updating the agreed national screening policies in the light of new evidence and ensuring that national policies are implemented;
- developing options for alternative funding mechanisms, as needed;
- recommending minimum accuracy standards for day-to-day reporting in laboratories to the bodies involved in laboratory accreditation;
- developing and implementing mechanisms of data collection for monitoring and evaluation as well as compiling and disseminating national data on the performance of cervical cancer screening;
- providing a forum to promote communication and the dissemination of information between States/Territories; and
- ensuring that key components of the cervical cancer screening process are kept under review, and recommending adjustments as necessary to maintain and enhance effectiveness and cost-effectiveness.

Successful performance of these functions requires:

- a single focal point at the national level to achieve the necessary degree of coordination;
- a group of persons acceptable to all major parties, including women as consumers, the medical profession, public health professionals and governments; and
- a group capable of providing authoritative and credible guidance and advice to governments.

At the national level, there are several existing organisations that could be involved in the development of an organised approach to cervical cancer screening. They include the Commonwealth Department of Community Services and Health, the Australian Health Ministers' Advisory Council, the Australian Cancer Society, the Australian Institute of Health, the National Health and Medical Research Council, professional bodies such as the specialist medical colleges, and consumer groups.

While each organisation has a potential contribution to make, none is suited to assuming global responsibility for a national, organised approach to cervical cancer screening.

To assume this overall responsibility, a group is required which has a high level of expertise across the relevant disciplines and is able to adequately represent the major interest groups. It is proposed that this group should constitute a National Cervical Cancer Screening Advisory Committee, to be supported by a Secretariat and technical sub-committees as needed.

The membership of the Committee should include Commonwealth and State/Territory representatives selected so as to represent women as consumers, as well as persons having the following range of expertise:

- cytopathlogy;
- epidemiology;
- family medicine/primary health care;
- gynaecological oncology;
- health economics; and
- health education.

8.4 STATE/TERRITORY RESPONSIBILITIES

States and Territories should be responsible for the following aspects of screening:

- implementing an organised approach to cervical cancer screening in accordance with the national policy;
- assessing and coordinating training to meet the needs of the screening program;
- compiling and disseminating data on the performance of cervical cancer screening and implementing modifications and adjustments as required within the State or Territory; and
- providing data to the national Secretariat.

Each State/Territory should ensure that all central functions are performed in a coordinated manner. This may involve a single body with responsibility for:

- recruiting women for screening, or coordinating recruitment for screening;
- ensuring that a reminder system is available;
- ensuring that a range of Pap smear taking services is available where needed;
- ensuring that professional and public education are provided;
- coordinating training and the provision of workforce;
- collecting, analysing and disseminating monitoring data;
- reviewing the performance of screening activities and recommending and implementing modifications as required;
- advising on funding aspects; and
- acting as a contact point between State/Territory screening activities and the National Committee and secretariat.

The emphasis within each State/Territory should be tailored to local strengths and deficiencies. Delivery of the above may involve a single coordination unit, steering or advisory committees and regional or local planning bodies.

8.5 CHANGING THE CURRENT SYSTEM

The three major options for cervical cancer screening are establishing a totally new system, maintaining the status quo, or re-orientating the present system within an organised framework. The last of these is the Committee's preferred option.

If the Commonwealth accepts the Committee's preferred option, then the various components of the proposed approach should be debated with the States/Territories and with the relevant professional and consumer bodies. An agreed approach should be determined within a relatively short time, preferably six months.

The following should be agreed upon:

- specific goals and targets for the various elements of a program
- relevant infrastructure for implementing and coordinating cervical cancer screening
- a timeline for review.

If the approach recommended in this report is adopted, it is envisaged that the National Cervical Cancer Screening Advisory Committee would play a key role in ensuring that the views of all relevant parties are heard, and that a broadly consistent approach in key areas is adopted across Australia.

Adopting a more organised approach does not mean setting up a totally different system and ignoring the crucial role of the current providers of cervical cancer screening services, either at the clinical or the laboratory level. The cooperation and commitment of the relevant professional and community groups must be sought and maintained so that the strengths already developed are appropriately acknowledged and built upon. However, establishment of an efficient and cost-effective screening system will also require financial support by governments for those aspects of cervical cancer screening not currently funded.

The organised framework outlined in this report requires attention to all elements of the screening pathway, including recruitment for screening, services for taking Pap smears, laboratory services, notification of results, the follow-up of women with abnormal Pap smears, and monitoring the effect of screening.

The two key elements of the screening pathway which currently lack a specific funding mechanism are recruitment and monitoring. The provision of Commonwealth funds for initiatives in each of these areas on a cost shared basis is needed to promote the adoption of an organised approach by States and Territories. Of particular importance is the establishment of a cervical cytology registry in each State

and Territory to provide a management tool for the program, ensuring that women with abnormal Pap smears are adequately followed up, reminding women with normal Pap smears to re-attend for screening on a regular basis, providing clinicians and pathologists with information which will assist them in providing a better service to women, and providing the data for monitoring the whole program.

In the absence of financial incentives provided by the Commonwealth, it is probable that some parts of Australia will see the continuation of the present ad hoc approach, which is inefficient in reducing the burden of cervical cancer, excessively expensive for the results achieved, and perpetuates inequity.

Implementing change in cervical cancer screening in Australia is quite a different proposition from the establishment of a relatively new technology such as mammography screening, and requires a different approach. Cervical cancer screening has been in operation in Australia for more than 25 years and a considerable body of expertise has developed. Establishment of an effective and efficient system, with maximum impact on cervical cancer, will require commitment by government and important changes in the behaviour of both women and health professionals. Besides attention to quality assurance at all levels of screening, major efforts need to be made to reduce rates of screening among women currently screened more frequently than necessary, and to increase the uptake of screening by under-screened women.

Australia now has an opportunity to overcome the inadequacies of the current approach and to establish a system of cervical cancer screening equal to the best in the world. The challenge is great, but so are the rewards. It is time to take action on the basis of existing knowledge and to realise the potential of preventing another 700-750 cases of cervical cancer each year.

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APPENDICES

APPENDIX 1

STAFF OF THE SCREENING EVALUATION COORDINATION UNIT

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APPENDIX 2

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The Screening Evaluation Coordination Unit and the pilot project evaluations were funded by grants from the Commonwealth Department of Community Services and Health.

Thanks go to the directors and staff of all the cervical cancer screening pilot projects and the associated evaluation teams, who contributed with enthusiasm and dedication to the national evaluation of cervical cancer screening. The names of all pilot projects and their directors are given in Appendix 3.

Special thanks also go to Mr Ross Saunders, Director of the Medical Statistics and Analysis Section of the Commonwealth Department of Community Services and Health, who at all times provided invaluable assistance to persons associated with this evaluation.

APPENDIX 3

CERVIX CANCER SCREENING PILOT PROJECTS

New South Wales

Hunter Region cervical cancer screening evaluation
(Director: Professor Rob Sanson-Fisher)

Women's health nurses evaluation
(Director: Helen Mackley)

Parramatta hospitals cervical cytology quality control project
(Director: Dr Frank Pacey)

Study of accuracy of self reporting of Pap smears
(Director: Professor Rob Sanson-Fisher)

Victoria

Victorian Cytology Service Registry evaluation
(Director: Dr Heather Mitchell)

Study of women who default from management of a significantly abnormal Pap smear
(Director: Dr Heather Mitchell)

Queensland

Evaluation of non-individualised recruitment strategies for cervical cancer screening among urban and rural women
(Director: Ms Jenny Muller)

Cervical cancer screening services for women in small towns
(Director: Ms Jenny Muller)

Cervical cancer screening services for Aboriginal and Islander women
(Director: Ms Jenny Muller)

South Australia

Upper Spencer Gulf Region cervical cancer screening demonstration program
(Director: Dr Margaret Davy

Western Australia

Evaluation of cervical cancer screening in rural areas
(Director: Ms Valerie Gardner)

Combined breast and cervical cancer screening registry evaluation
(Director: Ms Valerie Gardner)

Northern Territory

Report of cervical cancer screening amongst semi-traditional Aboriginal women
(Director: Ms Jill Nolan)

Alice Springs and Barkly Region rural women's health program
(Director: Ms Robin McDermott)

Australian Capital Territory

Evaluation of cervical cancer screening among older women
(Director: Ms Annabel Wyndham)

APPENDIX 4

SUPPORTING DATA

APPENDIX 4

TABLE 1 **Effect of different screening policies on incidence rates of cervical cancer in women aged 20-64 years**

Screening program	Cumulative rate/100,000 women	% Reduction in incidence	No. of tests	No. of cases prevented/ 100,000 tests
No screening	1575			
Screening every five years:				
Ages 20-64 years	258.6	84	9	146
Ages 25-64 years	287.8	82	8	161
Ages 35-64 years	480.9	70	6	182
Screening every year ages 20-34, years then every five years ages 35-64 yers	233.4	85	21	64
Screening at ages 25, 26, and 30 years, then every five years	175.4	83	9	144
Screening every three years:				
Ages 20-64 years	138.9	91	15	96
Ages 25-64 years	161.8	90	13	109
Ages 35-64 years	354.9	78	10	122
Screening every year ages 20-34 years, then every three years ages 35-64 years	132,0	92	25	59
Screening at ages 25, 26 and 29 years, then every three years	157.4	90	14	101
Screening every year ages 20-64 years	105.2	93	45	33

Source: Day (1986)

APPENDIX 4

TABLE 2 Estimated number of cases of and incidence rates for invasive cervical cancer for 1982–1985 for Australia by age group (a)

	Under 25	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75 plus	Total
Estimated number of cases													
1982	18	69	109	105	88	67	99	91	86	96	49	77	952
1983	14	57	100	121	105	84	75	76	107	95	69	87	989
1984	10	62	98	129	102	72	68	78	100	96	65	103	981
1985	22	62	112	121	105	89	90	73	114	90	75	84	1037
Estimated incidence rate (per 100000)													
1982	1.4	11.0	18.0	19.9	20.9	18.3	26.4	24.4	26.0	33.0	20.8	22.3	
1983	1.1	9.0	16.3	21.6	24.2	22.5	20.5	20.3	31.1	32.6	28.4	24.3	
1984	0.8	9.6	15.8	22.3	22.5	18.5	18.7	20.8	28.0	33.1	25.8	27.7	
1985	1.7	9.5	17.9	20.1	22.2	22.3	25.0	19.6	31.4	30.7	28.8	21.7	
Estimated incidence rate (per 100000) adjusted for estimated proportion of women with an intact uterus (b)													
1982	1.4	11.2	18.9	22.1	24.9	23.5	33.5	29.8	30.6	37.1	22.9	24.0	
1983	1.1	9.1	17.1	24.0	28.8	28.9	26.0	24.7	36.5	36.7	31.2	26.2	
1984	0.8	9.7	16.6	24.8	26.7	23.8	23.7	25.4	33.0	37.2	28.4	29.8	
1985	1.7	9.6	18.8	22.4	26.5	28.6	31.7	23.9	37.0	34.5	31.7	23.4	

Notes:

(a) 1985 NSW incidence projected from 1982–1984 data. 1984 Qld incidence data interpolated from 1982, 1983 and 1985 data. NT incidence for each age group/calendar year estimated by modelling from total number of cases in each year and number of cases in each age group for 1982–1985 combined. ACT incidence estimated from estimated NSW incidence and estimated ACT population. Numbers may not add due to rounding.

(b) Adjustment for proportion of women with an intact uterus using the method of Holman and Armstrong (1987).

APPENDIX 4

TABLE 3 Incident (new) cases of cancer of the cervix by age group, State/Territory and calendar year for which data are available

New South Wales	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+	Total
1982	0	2	18	39	36	35	23	40	29	31	34	17	8	5	6	323
1983	0	4	16	32	35	40	29	25	22	42	30	16	13	15	3	322
1984	0	3	22	26	37	43	22	23	27	35	35	21	22	8	8	332
1985	0	3	19	33	39	42	26	28	26	38	33	19	16	10	6	338

Victoria	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+	Total
1982	0	3	14	21	23	14	18	21	22	30	40	18	9	9	6	248
1983	0	4	17	25	28	17	22	18	16	28	19	15	11	6	5	231
1984	0	1	10	28	32	22	12	16	26	22	27	21	15	8	7	247
1985	0	10	14	28	33	26	15	27	20	30	24	22	11	6	5	271

Queensland	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+	Total
1982	0	2	20	23	24	17	11	11	15	13	10	9	5	5	1	166
1983	0	2	13	17	27	21	14	10	15	12	18	16	8	6	3	182
1984	0	2	17	20	26	18	15	13	13	17	14	12	14			181
1985	1	2	16	20	23	14	19	17	10	24	14	11	14			185

South Australia	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+	Total
1982	0	1	3	4	9	6	3	13	5	2	5	1	8	1	1	62
1983	1	0	2	5	11	8	7	8	9	14	8	8	2	2	2	87
1984	0	1	5	8	12	10	11	7	3	9	9	5	3	4	0	87
1985	0	1	7	11	13	5	9	5	7	7	7	11	1	4	2	90

Western Australia	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+	Unk	Total
1982	1	8	9	13	8	10	6	12	12	6	3	3	3	3	3	1	98
1983	0	1	3	14	12	12	7	9	9	7	14	11	3	5	0		107
1984	0	3	4	11	15	4	6	6	5	12	8	2	8	2	1		87
1985	0	5	2	15	7	10	13	8	8	12	8	10	6	2	1		107

Tasmania	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80+	Total
1982	0	0	2	5	2	2	4	0	6	3	2	0	1	2	29
1983	0	1	3	3	5	2	3	4	3	2	4	2	2	0	34
1984	0	0	2	2	5	1	4	2	2	4	1	3	1	1	28
1985	0	0	2	2	4	4	5	3	1	2	2	1	0	0	27

Northern Terr	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+	Total
1982	0	0	2	2	1	3	1	0	1	0	1	0	0	0	0	12
1983	0	1	2	2	1	3	1	1	1	1	1	1	0	0	0	14
1984	0	0	1	1	1	1	1	0	1	0	1	0	0	0	0	7
1985	0	0	1	1	1	1	1	0	1	0	1	0	0	0	0	7

Aust Capt Terr	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+	Total
1982	0	0	1	2	2	2	1	1	1	1	1	0	0	0	0	12
1983	0	0	1	2	2	2	1	1	1	1	1	0	0	0	0	12
1984	0	0	1	1	2	2	1	1	1	1	1	0	0	0	0	13
1985	0	0	1	2	2	2	1	1	1	1	1	0	0	0	0	13

Australia	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75+	Total
1982	1	17	69	109	105	88	67	99	91	86	96	49	77	952
1983	1	13	57	100	121	105	84	75	76	107	95	69	87	989
1984	0	10	62	98	129	102	72	68	78	100	96	65	103	981
1985	1	21	62	112	121	105	89	90	73	114	90	75	84	1037

Australia (per 100000)	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75+
1982	1.4	11.0	18.0	19.9	20.9	18.3	26.4	24.4	26.0	33.0	20.8	22.3
1983	1.1	9.0	16.3	21.6	24.2	22.5	20.5	20.3	31.1	32.6	28.4	24.3
1984	0.8	9.6	15.8	22.3	22.5	18.5	18.7	20.8	28.0	33.1	25.8	27.7
1985	1.7	9.5	17.9	20.1	22.2	22.3	25.0	19.6	31.4	30.7	28.8	21.7

Australia (per 100000) - adjusted for hysterectomy	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75+	Age standardised rate
1982	1.4	11.2	18.9	22.1	24.9	23.5	33.5	29.8	30.6	37.1	22.9	24.0	18.2
1983	1.1	9.1	17.1	24.0	28.8	28.9	26.0	24.7	36.5	36.7	31.2	26.2	18.7
1984	0.8	9.7	16.6	24.8	26.7	23.8	23.7	25.4	33.0	37.2	28.4	29.8	18.1
1985	1.7	9.6	18.8	22.4	26.5	28.6	31.7	23.9	37.0	34.5	31.7	23.4	18.7

Source: State and Territory Cancer Registries. 1985 New South Wales incidence projected from 1982–84 data. Northern Territory incidence for each age group/calender year estimated by modelling from total number of cases in each year and number of cases in each age group for 1982–1985 combined. Australian Capital Territory incidence estimated from estimated New South Wales incidence and estimated Australian Capital Territory population. 1984 Queensland incidence interpolated from 1982–83 and 1985 data.

APPENDIX 4

TABLE 4 Average number of deaths from and mortality rates for cancer of the cervix by five year age group and calendar year

Average deaths

Age group	< 20	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total
1975-79	0.00	1.80	6.40	9.80	11.60	13.40	25.00	38.00	42.60	46.80	40.80	37.60	32.00	25.80	18.20	349.80
1980-84	0.00	0.40	6.60	12.60	15.40	19.80	23.40	28.00	36.20	42.60	46.00	34.80	30.60	22.60	18.80	337.80
1985-88	0.00	1.00	5.00	14.75	17.00	22.25	23.00	23.50	37.25	38.75	48.25	42.00	29.75	26.25	21.75	350.50

Mortality rate per 100000 (using total population)

Age group	< 20	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total
1975-79	0.00	0.30	1.10	1.93	2.76	3.60	6.63	9.96	12.50	15.38	15.87	19.26	22.31	28.64	29.20	4.93
1980-84	0.00	0.06	1.07	2.08	2.94	4.69	6.34	7.53	9.72	12.82	15.98	14.88	18.84	21.49	24.26	4.45
1985-88	0.00	0.15	0.74	2.30	2.73	4.29	5.53	6.42	10.11	10.55	15.53	15.87	15.20	21.54	22.76	4.33

Note: Data for 1989 are not yet available.

Source: Australian bureau of statistics mortality tabulations and population estimates.

APPENDIX 4

TABLE 5 **Estimation of the proportion of cervical cancer currently being prevented by screening**

Age group	No. of women in Australia (1989)	Expected incidence	Proportion of women with a uterus	"At risk" population	No. of cancers (SCC) expected
20-24	657,231	5	1.0	657,231	32.9
25-29	702,376	15	0.99	695,352	104.3
30-34	678,090	25	0.93	630,624	157.7
35-39	647,999	45	0.93	602,639	271.2
40-44	595,306	45	0.80	476,245	214.3
45-49	459,329	45	0.80	367,463	165.4
50-54	387,825	45	0.75	290,869	130.9
55-59	360,893	45	0.77	277,888	125.1
60-64	368,365	45	0.79	291,008	131.0
65-69	345,478	45	0.87	279,837	125.9
70-74	264,926	45	0.83	219,888	98.9
					1557.6

Notes:

- Assume screening of women aged 20-69 years prevents cancers among women 20-74 years.
- 1037 cases observed in 1985; 957 cases among women aged <75 years.
- Expect 85% of these cancers to be squamous cell carcinoma (SCC). = 814 cases of SCC observed in 1985.
- Assume 90% of these cases of SCC are preventable = 732 cases of SCC remain to be prevented.
- Proportion currently prevented = $1 - \frac{814}{1558} = 48\%$

APPENDIX 5

ECONOMIC COSTING OF PAP SMEAR REPORTING

Background

One of the recommendations in the 1987 Report of the "AHMAC Working Party on the Development of a National Cervical Cancer Screening Strategy", was that an economic costing of Pap smear reporting be undertaken. It was subsequently agreed that this costing be undertaken by the Screening Evaluation Coordination Unit (SECU) established at the Australian Institute of Health under the Commonwealth's "New Initiatives for Women" budget. Four States were approached and all agreed for their public pathology laboratory to cooperate with SECU in the costing initiative.

Methodology

A standardised approach was taken in all four public laboratories to estimate a "unit cost per Pap smear". Costs were allocated on a consistent basis to five cost categories (staff, capital, consumables, overheads and repairs/maintenance). Where laboratories read tests other than Pap smears, the costs attributable to Pap smears were calculated from relative workload estimates.

To estimate capital costs, (i.e. interest and depreciation) the laboratories were asked to provide an inventory of assets showing age, useful life and current value of each item. Depreciation and interest were calculated using rates of 10% and 12% respectively, applied to the current market value of each asset.

Shadow prices were calculated for rent (as public laboratories are not usually apportioned a rental charge) using current market rates for similar floor space and location. Similarly, shadow prices were used for other items that were not attributed to Pap smear reporting in the laboratories accounting system (e.g. items held in general store, overheads, salary on-costs and computing).

On the outcome side, "Pap smear" was used as the standard output measure (rather than slides read) as the practice of using two slides for one Pap smear varies considerably in frequency from State to State.

Results

Table 1 provides a summary of the resulting cost estimates for Pap smear reporting. The average cost per Pap smear in 1988/89 prices is $10.20, ranging from a low of $9.78 to a high of $10.71 over the four laboratories costed.

APPENDIX 5

TABLE 1 Cost of reporting a Pap smear in four public pathology laboratories in 1988/89 prices

Cost category	Lab 'A' $ per Pap smear	Lab 'B' $ per Pap smear	Lab 'C' $ per Pap smear	Lab 'D' $ per Pap smear	Average $ per Pap smear
Staff					
Salaries/Wages	6.70	7.02	6.95	6.76	6.86
On costs	0.45	1.13	1.39	0.99	0.99
Total Staff	7.15	8.15	8.34	7.75	7.85
Administration					
Consumables	1.31	0.50	0.58	0.72	0.78
Overheads(c)	0.07	0.17	0.19	0.19	0.16
Repairs and maint.	0.15	0.29	(b)	(b)	0.10(b)
Total Admin	1.53	0.96	0.77	0.91	1.04
Capital					
Lease of buildings	0.60	0.38	0.69	0.43	0.53
Deprec. provision on equipment	0.28	0.30	0.51	0.70	0.45
Interest provision on equipment	0.22	0.16	0.40	0.58	0.34
Total capital	1.10	0.84	1.60	1.71	1.31
Total cost 1988/89	$9.78(a)	$9.95	$10.71	$10.37	$10.20

Notes:

(a) The corresponding estimate for 1989/90 for this laboratory is $10.76 per Pap smear.
(b) Estimate for repairs and maintenance included in consumables for laboratories 'C' and 'D'.
(c) Overheads include cleaning, fuel, light and power.

For all laboratories staff is by far the largest cost item, accounting for 77% of the average unit cost (or $7.85 per Pap smear). Capital is the next largest item accounting for 13% of the average unit cost (or $1.31 per Pap smear) followed by consumables/administration at 10% (or $1.04 per Pap smear).

Apart from their service delivery role, all four of the public laboratories studied also devoted an important share of their resources to teaching, quality control and research. On the basis of variable costs only (i.e. not including any joint costs shared with service delivery - for example, lease of premises) it was estimated that the four public laboratories devoted approximately 11% of their resources to teaching, quality control and research.

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Read.

CERVICAL SCREENING

LONG-TERM MEASURES

1. NATIONAL CONSENSUS MEETING JUNE 1988

   - Screening Frequency
   - age of cessation

2. INCREASE VC(G)S SERVICE

3. NATIONAL/STATEWIDE DATA BASE

4. DEVELOPMENT OF GOOD CALL/RECALL SYSTEM

COPY

ANTI-CANCER COUNCIL OF VICTORIA

A PROPOSAL TO AMEND THE CANCER ACT IN REGARD TO REPORTING OF SCREENING TESTS FOR CANCER.

Aim

To change the Cancer Act 1958 and the Cancer (Reporting) Regulations 1981 to include the following sections:

1. Cancer Act -

   Registration by service providers of the results of tests, defined in the Cancer Regulations, which are used for mass screening to detect cancer in the population of Victoria.

2. Cancer Regulations -

   Papanicolaou smear test of cervical and endocervical cells to detect the presence of pre-invasive or invasive changes of carcinoma of the cervix.

Principles underlying cancer screening legislation

1. Screening programs for prevention and/or early detection of cancer are of high priority.

2. Programs involving a screening component of either the general population, or a high risk group, require formal organisation for maximum effectiveness. Some of these organisational needs may differ from those appropriate to systems of care for the sick.

3. Registers of the results of screening tests for cancer are necessary to improve the quality and effectiveness of screening programs designed to prevent cancer.

4. Information from screening programs to detect or prevent cancer must be collected in a manner to facilitate evaluation and modification, where necessary, of the programs, where necessary, of the programs.

5. The privacy of an individual whose results are included in a screening program must be guaranteed within the functions of the program.

6. The rights of service providers participating in screening programs must be clear and guaranteed.

7. Service providers involved in delivery and interpretation of cancer screening tests should facilitate and participate in evaluation of the cancer screening programs.

8. Results of evaluations of cancer screening programs should be widely available, in a manner in which individuals being screened or service providers cannot be identified.

Justification

It can be seen that from the above **Aim** that the recommended changes to the Act apply to the use of the Papanicolaou smear (cervical smear, pap smear test, pap smear) in prevention and detection of cancer of the cervix.

This amendment to the Cancer Act is being proposed to enable the establishment of a central registry of the results of cervical smears from women in Victoria. There are two components of the proposal which require justification:

1. The need for a central registry of the results of cervical smears from women in Victoria.

2. The need for legislation which provides for compulsory registration of the results of cervical smears from women in Victoria.

The proposed amendments allow the legislation to be sufficiently broad so that other screening tests apart from the cervical smears can be included in the future by changes in the regulations. It also allows removal of tests if they should become obsolete in the future.

1. The need for a central registry of cervical smears

If all women in Victoria participated in regular screening by having a cervical smear, and if appropriate follow up and management of abnormalities detected on screening occurred, then cervical cancer could be virtually eliminated. This is not the case at present.

Around 250 women are diagnosed with invasive cancer of the cervix each year in Victoria and around 90-100 women die of it. It is estimated that up to 10 times this number of women develop pre-invasive or precursor changes of cervical cancer which, if left untreated, may progress to invasive cancer.

There appears to be an increasing incidence of Human Papillomavirus (HPV) infections of the genital tract in young women. Infection with this virus has been strongly associated with the development of cervical cancer. Therefore there is considerable concern that a large increase in the number of women with cervical cancer could result from the increased incidence of HPV infection.

The cervical smear is capable of detecting HPV infection, pre-invasive or precursor changes and early invasive changes of cancer of the cervix, all of which are easily curable if treated promptly and correctly.

There is a variety of reasons why women in Victoria are still developing invasive cancer of the cervix.

1. Some women do not attend for cervical smears, either not at all, or at infrequent intervals, for a variety of reasons.

2. Some doctors do not perform cervical smears when the opportunity arises.

3. Sampling methods used by doctors in taking cervical smears may be inadequate.

4. Handling and interpretation of cervical smears within pathology laboratories may be inadequate.

5. Follow up and management of women who have abnormal results may be inadequate. The problem may be either at the level of the pathology laboratory which is advising further testing, or at the level of the women's medical practitioner who has received the abnormal result from the laboratory.

6. Women when advised of abnormal results may fail to attend for the necessary follow up.

Many of these factors could be substantially improved or overcome by the establishment of a central registry of cervical smears (Cervical Cytology Registry) which could:

a. Give pathologists access to a woman's previous screening history when handling and interpreting a current smear in their laboratory. For example, particular care could be taken with a smear from a women who has a previous history of abnormal smears.

b. Be responsible for followup of women with abnormal smears - either reminding the practitioner of the need for further investigations until the outcome necessary is achieved and notified to the Registry, or by eventually contacting the women if no response is obtained from her practitioner within a reasonable period.

c. Running quality control programs on smears taken by medical practitioners and the pathology interpretation by the cytology services. The results of such evaluations could be supplied to the service providers in a form which was appropriate to lead to any improvements which might be necessary.

d. Be responsible for reminder notices to either service providers or the women themselves of the need for the next cervical smear at the appropriate interval, when the previous smear has been normal.

e. Use the data within the Registry to monitor trends in cancer of the cervix in relation to HPV infection, precursor changes, current management methods and other factors which might arise in relation to cervical cancer in the future.

2. The need for compulsory registration of results

For satisfactory functioning of a Cervical Cytology Registry, complete or near complete reporting of results is essential. This includes the reporting of both normal and abnormal results.

Legal opinion suggests that at present in Victoria, informed, signed consent from a woman from whom a smear is taken would be necessary before the result could be transferred to a third party such as a Registry.

There are 1.5 million women eligible for cervical smears in Victoria, and the current recommended frequency of testing if a woman's test is normal is two yearly. If a smear has been abnormal, even more frequent testing is required. The number of women and tests involved is in marked contrast to the numbers involved in other registries, eg the reporting of abnormalities such as foetal or neonatal birth defects which make up only a small proportion of births in Victoria, and the head of power for which can be reasonably met by a Consultative Council.

It is clear from the number of registrations involved in the proposed Cervical Cytology Registry, that the logistics of obtaining informed, signed consent from women on every occasion on which they have a smear are insummountable.

It has been indicated already to the Anti-Cancer Council of Victoria Working Party on proposals for a Cervical Cytology Registry that the health providers involved will be reluctant to forward the results to the Registry in the absence of a legal compulsion. It is apparent that without this, the Registry will not function.

Details of a proposal for a Cervical Cytology Registry in Victoria

A proposal for a Victorian Registry for cervical smears has been developed by the Women's Health Policy Unit of the Health Department Victoria (copy enclosed). This has been forwarded to the Commonwealth Government seeking assistance with funding for the establishment of a Registry.

Further details concerning input and accession to the Registry are still being worked out. In principle, the pathology laboratories performing cervical smears are the source of the input into the Registry. They should also have electronic accession to the Registry to obtain results of previous smear history on women from whom they have a current smear in the laboratory.

It is proposed that the Registry have links with the Victorian Cancer Registry to enable records of cervical cancers diagnosed to be linked with previous smear history. This is essential for quality control data.

It is envisaged that non-identifying, summary data would be available to organisations such as the Anti-Cancer Council of Victoria who run cervical cancer screening programs for women in Victoria. This would enable evaluation of the screening programs and adaptation where necessary to reach all women in the community.

The minimum information to be sent by pathology laboratories to the cervical smear Registry would include:

Name (surname, first name, previous surnames)
Date of birth
Name of practitioner taking the test
Name and unique recorder number of laboratory reporting the test
Date the test was taken
Result of screening test, including recommendations about timing and nature of future tests
Result of histopathology tests

The Registry will be governed by a Board of Management as detailed in Attachment 1. It will also have an Ethics Committee and a Data Release Committee to oversee the use of the data stored in the Registry.

Consultation

We emphasise that this initiative is in line with the recommendations from:

- NH&MRC publication "Preventing Cervical Cancer" (August 1987)
- AHMAC subcommittee report on breast cancer and cervical screening (November 1987)
- Why Women's Health? Victorian women respond. Report of the Victorian Ministerial Women's Health Working Party (August, 1987)
- Australian Cancer Society report "A National Cancer Prevention Policy for Australia" (December 1987)
- Anti-Cancer Council of Victoria Working party on mass screening for cervical cancer (August 1987)
- Report on the role and functions of the VC(G)S. A Working Party convened by the Women's Health Policy and Programs Unit, Health Department Victoria (to be released early 1988).

The Anti-Cancer Council of Victoria has established a working party of pathology laboratories, (both private and public) performing cervical smears, gynaecologists, general practitioners, Victorian Cancer Registry and other persons involved in service delivery related to cervical smears to establish the manner in which they could participate in the Registry. Representatives of the Women's Health Policy and Programs Unit of the Health Department Victoria have been involved in these discussions. There has already been general acceptance of the need for this Registry.

Discussions in the last six months with women's health groups over improvements in the cervical cancer screening program (including the Registry) have been enthusiastically received. Further community consultation with women's groups is envisioned to explain the nature of the proposals and seek opinions and support.

Impact

The financial impact of establishing and maintaining a Cervical Cytology Registry is small. You will note from the attached proposal from the Health Department Victoria that the initial set up cost associated with VC(G)S is less than $200,000, and the annual running costs are in the vicinity of $200,000. It

is proposed that the Registry will provide for all participating laboratories a microcomputer and modem and software to facilitate the input of data to the Registry and allow them to enquire of the central data base. This means there will be no major capital cost to the participating laboratories.

The beneficial impact of the proposal will be to improve the morbidity and mortality due to cervical cancer in women in Victoria.

Robin Marks
Heather Mitchell

CX-PRM-02/mr
8 March 1988

PROPOSAL FOR A VICTORIAN STATE-WIDE REGISTRY FOR CERVICAL SMEARS

This proposal seeks Commonwealth funding to expand the existing registry at the Victorian Cytology (Gynaecological) Service (VC(G)S) in order to establish a state-wide registry for cervical smears.

The proposal has been developed by a Working Party convened by the Women's Health Policy and Programmes Unit, HDV. Members represent the following organisations and areas of expertise: The Anti Cancer Council of Victoria, The VC(G)S, Health Department Victoria (HDV) epidemiology, general practice in community health and oncological gynaecology.

INTRODUCTION

Despite pap smears being available in Australia since the mid 1960's, 350 women still die each year from cervical cancer. Reasons that have been put forward to account for these deaths include failure of many 'at risk' women to have regular Pap smears, deficiencies in the management of women with precursor lesions, and the concept that the disease has become more malignant in recent years.

Determining the relative importance of these reasons has been hindered by the fragmentary system whereby Pap smears are taken and reported in Australia. Instituting relevant strategies to address the problem has been extremely difficult in the absence of epidemiologic data.

Some valuable information regarding these problems has emerged in Victoria from an analysis of the 4 million records accumulated by the public sector laboratory, VC(G)S.

Unlike other Australian States, one single laboratory, the VC(G)S, has reported the majority of Pap smears taken in Victoria and has thus been able to function as a surrogate statewide register. With the recent move of service provision to private laboratories, the ability of the VC(G)S records to provide such information is being eroded. It is vital that a comprehensive database be maintained in Victoria as it provides the only population perspective on cervical cancer and its screening programme for Australia for the last 20 years.

The value of such a register to women, gynaecologists, cytopathologists, health promotion workers and public health personnel can be readily appreciated.

OVERALL AIM

The overall aim of the Victorian Registry for Cervical Cytology is to facilitate the development, implementation and evaluation of screening strategies to reduce the morbidity and mortality due to cervical cancer among women in Victoria.

SPECIFIC OBJECTIVES

1. To improve the quality of data available to State and Commonwealth Government health bodies concerning cervical cancer and screening rates;

2. To monitor the incidence and prevalence of precursor lesions and trends in risk factors associated with cervical cancer (eg. Human Papoloma Virus);

3. To provide the necessary data for evaluating the effectiveness of screening policies, programmes and strategies that target under screened and high risk groups;

4. To increase the quality of reporting of Pap Smear results in both the public and private sectors by linking together previous smear results with later outcomes.

BACKGROUND

The registry will be independently managed but located within the Victorian Cytology Service (VC(G)S). The VC(G)S is ideally suited to housing the registry as it currently reports on approximately 75% of all Pap smears taken in Victoria.

The VC(G)S, a state-funded public health service, was established in 1965. Since that time, it has served as a central register for Victoria and has provided much of the Australian data concernng cervical cancer trends and the associated risk factors.

The computer system at the VC(G)S currently contains all VC(G)S data back to 1965. It therefore has the capacity to:

1. link new and current smear findings with previous ones;

2. to implement a call and recall system in accordance with a national screening policy for women with normal and abnormal screening histories;

3. carry out the required epidemiologic work, as it has a proven monitoring and research capacity.

The remaining 25% of smears which are not reported by the VC(G)S are evaluated in public hospitals and in the private sector.