

APPENDIX A.—GLOSSARY OF TERMS

- Biopsy** .—Removal and examination (usually microscopic) of tissue from the living body, performed to establish precise diagnosis.
- Carcinoma in situ (CIS)**.—A neoplastic (cancerous) lesion wherein the tumor cells lie only within the epitheliums or origin (i. e., preinvasive carcinoma).
- Clinical carcinoma** .—Carcinoma (cancer) which has developed to such an extent as to be diagnosed by overt signs and symptoms. Clinical carcinoma is normally invasive carcinoma.
- Colposcopy**.—Visual examination of the vagina and cervix by means of a colposcope (i. e., a speculum or instrument inserted into the vagina for the examination of tissues by means of a magnifying lens).
- Ionization**.—A large, cone-shaped biopsy which can be performed for both diagnostic and therapeutic purposes.
- Cryosurgery** .—Surgery performed by freezing a portion of the cervix.
- Directed biopsy**.—A biopsy using a colposcope to “direct” the procedure.
- Dysplasia** .—A lesion which is thought to be precancerous when found on the cervix.
- False-negative rate**.—The number of persons with disease but not identified by the test (i.e., false negatives), divided by the total number of persons with the disease.
- False-positive rate**.—The number of persons without disease but not classified by the test as being without disease (i. e., false positives), divided by the total number of persons who are disease free.
- Invasive carcinoma**.—A mass of cancerous cells which has “invaded” the surrounding tissue (i. e., not confined to the epitheliums, as is carcinoma in situ).
- Occult carcinoma**.—A preclinical stage of invasive carcinoma.
- Pap test**.—An exfoliative cytological staining procedure for the detection and diagnosis of various conditions, particularly malignant and premalignant conditions of the femal genital tract (e. g., cancer of the cervix), in which cells from the genital epitheliums are obtained by smears, fixed and stained, and examined under a microscope for evidence of pathologic changes.
- Precancerous lesion**.—Cell abnormality (lesion) that is thought to be a precursor to cancer. Dysplasia is considered to be a precancerous lesion.
- Preclinical invasive carcinoma** .—**invasive carcinoma** which has not yet **developed** to such an extent as to be diagnosed by overt signs and symptoms.

APPENDIX B.—HEALTH STATE VECTORS FOR SCREENING POLICIES

	Initial vector ^a	Vector after first screening	Vector after second screening
H1 Normal	0.986000	0.986000	0.986000
H2 Reverted normal	0.003000	0.003000	0.003000
H3 Dysplasia	0.005000	0.001000	0.000200
H4 CIS	0.004000	0.000800	0.000160
H5 Invasive	0.002000	0.001840	0.001693
H6 High-risk, disease free	0.000000	0.007200	0.003640
H7 High-risk, dysplasia	0.000000	0.000000	0.000000
H8 High-risk, CIS	0.000000	0.000000	0.000000
H9 High-risk, invasive	0.000000	0.000000	0.000000
H10 Hysterectomy	0.000000	0.000160	0.000307
H11 Emigration	0.000000	0.000000	0.000000
H12 Death due to cervical cancer . .	0.000000	0.000000	0.000000
H13 Death due to all other causes . .	0.000000	0.000000	0.000000

^aThe Initial vector is screened twice. More aging begins.

^bThe vector after the second screening is subsequently aged according to the disease progression chart in table 4.

APPENDIX C.—COST FORMULATIONS

Low=Cost Model¹

The low-cost model is not based on fee-for-service, so costs were assigned by estimating resources required for a hypothetical patient load and by estimating allocation schedules. Listed below are staffing requirements, rent and utility expenses, and furniture and equipment costs. All expenses other than those specifically noted are allocated to Pap testing.

Pap Test Cost Calculations

	<i>Cost per day</i>
1 physician (10% time @ \$20/hr) ²	\$ 4
1 registered nurse practitioner (100% time @ \$12/hr) ³	72
2 licensed vocational nurses (100% time @ \$6.50/hr)	104
1 receptionist/clerk (100% time @ \$3.49 /hr)	28
Rent: 1,200 sq ft (@ \$1/sq ft/mo) (3 examination rooms, office, waiting area, lounge, bath)	57
Phone and utilities	5
Furniture and equipment (see list and prices below) (\$18,000 amortized @ 570 for 10 years)	9
Supplies, expendable	33
Total	\$312

Assuming each L.V.N. sees 1 patient every 15 minutes, then 64 patients are seen each day:
 312 ÷ 64 = \$5 Pap test

Furniture and Equipment Costs

	<i>Cost per item</i>	<i>Total cost</i>
Weight scale (1)	\$ 177	\$ 177
Exam table with stirrups (3)	256	768
Supply cart (1)	85	85
Equipment/suppl. table (3)	224	672
Lamps, exam (3)	34	102
Stools, exam (3)	72	216
Cabinet, instrument (1)	310	310
Punch, biopsy, uterine (4)	138	552
Forceps, uterine (4)	75	300
Curette, endocervical (4)	28	112
Speculum, endocervical (4)	100	400
Colposcope (2)	3,650	7,300
Unit, cryosurgery (1)	695	695
Tank, NO	110	110

	<i>Cost per item</i>	<i>Total cost</i>
Sphygmomanometer (4)	33	132
Stethoscope (4)	5	20
Wastebasket with cover (3)	80	240
Desk (4)	156	624
Chair, desk (4)	90	360
Typewriter,	890	890
Cabinet, filing, 4 drawer (2)	75	150
Cabinet, filing, 1 drawer (1)	25	25
Bookcase (1)	35	35
Boards, bulletin (2)	50	100
Roller deck (1)	10	10
Chair, comfort/lounge & waiting room (10)	60	600
Dictionary (4)	15	60
Dictionary, medical (4)	30	120
Couch (1)	350	350
Table, typewriter (1)	25	25
Table, small (4)	65	260
Refrigerator, small (1)	150	150
Stove, small (1)	200	200
Sinks, installed (5)	200	1,000
Wastebasket (3)	10	30
Miscellaneous	500	500
Total		\$17,680

Summary of Low-Cost Model⁴

	<i>Practitioner</i>	<i>Lab</i>	<i>Hospital</i>	<i>Total</i>
Pap.	\$ 5	\$3	—	\$ 8
Coloscopy	20	—	—	20
Biopsy	10	12	—	22
Cryosurgery	20	—	—	20
Ionization.	400	—	\$2760	3200
Hysterectomy	2,000	—	5,900	7,900

High-Cost Model⁶

	<i>Practitioner</i>	<i>Lab</i>	<i>Hospital</i>	<i>Total</i>
Pap.	\$ 2	\$10	—	\$ 30
Coloscopy	50	—	—	50
Biopsy	25	55	—	80
Cryosurgery	55	—	—	55
Ionization.	400	—	\$2,360	2,760
Hysterectomy	2,000	—	5,900	7,900

¹Except as noted, all items were identified and priced in consultation with Reyes (30). Equipment was priced through standard catalogs.

²Assuming 25 percent of time allocated to Pap test backup.

³Assuming 75 percent of time to Pap test backup, which includes patient health education activities.

⁴Assuming a patient load of 15,360/year (i.e., 2 L. V.N. S. each seeing one patient every 15 minutes for 48 weeks of the year).

⁶Total hospitalization charges for diagnosis of CIS and invasive cervical cancer, respectively, including multiple admissions. Source: *Hospitalizations and Payments to Hospitals, Third National Cancer Survey, HEW publication No. 76-1094, March 1976* (costs adjusted to 1979).

⁶The high-cost model is used in the base case (see app. D).

APPENDIX D.—VALUES FOR BASE CASE ANALYSIS

To establish a base against which to make comparisons of the effects of assigning alternative values to variables, a base case is established in which the study's variables are assigned the following initial values.

1. The initial disease transition matrix is as shown in table 4.
2. The initial population vector (i.e., the state of health of the initial population) is as defined in appendix B.
3. The population is screened twice before aging begins.
4. Error rates:
 - False-negative rates for the Pap test: 0.2 for dysplasia, CIS, and preclinical invasive disease.
 - False-positive rate: 0.05.

5. The proportion of invasives which are preclinical and therefore are eligible for detection by Pap test = 0.1.

6. Discount rate = 10 percent.

7. Costs (high-cost model):

Pap test	\$ 20
Pap cytology.	10
Colposcopy	50
Biopsy	80
Cryosurgery	55
Ionization	2,500
Hysterectomy	7,900

Sensitivity analysis is used to compare the effect of assigning other values.

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