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Contents

List of Tables

HEALTH CARE EVALUATION

Introduction

Health care evaluation is the formal examination of the effectiveness, efficiency and acceptability of planned intervention in achieving stated objectives (1).

Health care evaluation is a complex multidimensional concept. Evaluation occurs within a framework that examines the entire service (e.g. personnel, expenditure etc.,) and its component parts (e.g. preventative, diagnostic and therapeutic measures). Any evaluation of a particular health care service must also take into account the economic, social and political constraints under which the system operates.

Origins of Health Care Evaluation

Early attempts at evaluation consisted mainly of counting health events and describing measures to be implemented to prevent disease. For example, in the Middle Ages leprosy and the plague were well documented and measures were introduced to minimise epidemics (1).

Post World War 1, interest developed in evaluating the processes of service delivery and usually involved self-rating appraisals. Health care evaluation has evolved from purely descriptive techniques of the mid 1960s to more rigorous experimental approaches involving statistical analyses in addition to qualitative approaches(2).

Approaches to Evaluation

Health care services can be evaluated using a three-part approach, namely “structure”, **“**process**”** and **“**outcome**”** (3):

- structure refers to the attributes of the health service in which the care occurs e.g human resources, material resources and organisational structure
- process refers to aspects of the health service involved in giving and receiving care e.g. diagnostic and therapeutic measures
- outcome refers to the impact of the service on individuals and populations e.g. improvements in client’s health status and degree of client satisfaction with care(4)

Components of Evaluation

Health service evaluation must consider:

- objectives
- need, want and demand
- efficiency, effectiveness and acceptability

Objectives

Before commencing any evaluation procedure it is essential that the health unit has clearly defined objectives that describe the desired outcomes. Objectives should be stated in terms that can be measured.

Need, Want and Demand

In order to determine whether a health unit is successful in achieving its stated objectives, it is necessary to distinguish between the need, want and demand of health care and the interrelationship between them (1).

- Need is the difference between actual and optimal levels of health
- Want refers to an individual's own recognition of the need for a particular health service
- Demand is linked to want and refers to an individual's health seeking behaviour in preference to all other services. Demand is dependent on factors such as availability of services and socioeconomic background. Not all demand can be met in the public system e.g. waiting lists for appointments and elective surgery

Efficiency, Effectiveness and Acceptability

These concepts need to be included in an evaluation program (1):

- Efficiency or cost-benefit is an economic concept that refers to the costs of intervention relative to its effectiveness e.g. comparing different procedures that are expected to produce the same outcomes to see which costs less

- Effectiveness is the most basic indicator of quality and refers to the outcome of health care in medical, psychological or social terms e.g. different forms of treatment that cost the same are compared to see which is the most effective

- Acceptability takes into account whether medical intervention is professionally and/or socially adequate e.g. does each activity meet the expectations of the client, the medical staff and the organisation?

Evaluation of Public Health Surveillance Systems

Although the general principles of evaluation can be applied to a public health surveillance system, evaluation of surveillance systems requires a greater focus on outcome measures than on the process. The benefits of any surveillance system depend on the most cost effective use of available resources.

The overall aim of public health surveillance system evaluation is to identify whether the system is meeting its stated objectives and if it reflects current public health needs. Regular evaluations ensure the efficient operation of surveillance systems.

Steps in Evaluating a Surveillance System (5):

- public health importance (the need for surveillance of a particular health problem)
- description of health events under surveillance (case definitions for notifiable diseases)
- formulation of the objectives of the system (stated in measurable terms)
- description of how the system has been used to help prevent and control disease (usefulness of a system)

Does the System:

- detect epidemics?
- detect trends in the monitoring of the health problem in question?
- identify risk factors?
- promote epidemiological research leading to control or prevention of the health problem?
- promote improved clinical practice?

Operation of the System

To evaluate a surveillance system it is necessary to know how the system operates. The following characteristics should be examined:

- population under surveillance
- method of data collection and analysis
- organisational structure
- dissemination of information
- frequency of reporting and feedback
- quality control measures

Qualitative Attributes

- simplicity
- flexibility
- acceptability

Quantitative Attributes

- sensitivity
- predictive value
- representativeness
- timeliness

Cost Effectiveness

This involves examining the costs of the resources required to operate the system. This includes the costs of personnel and resources required for the collection, processing, analysing and reporting of surveillance data.

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March 1997

HIV INFECTION IN SOUTH AUSTRALIA

HIV Infection 1985 - 31/03/1997

There have been 656 individuals diagnosed with HIV infection, 607 (93%) in males and 49 (7%) in females (Table 1.1). Of the males diagnosed, 462 (76%) reported male to male sexual contact, 53 (9%) reported injecting drug use and 27 (4%) reported both risk factors. Injecting drug use was reported by 22 (45%) of the women diagnosed with HIV infection and 20 (41%) reported heterosexual transmission.

HIV Infection 01/01/97 - 31/03/97

Seven males and two females have been diagnosed with HIV infection in the first quarter of this year. All of the men reported male to male sexual contact as their risk factor (Table 1.2), and 3 men had acquired their infection in the preceding 12 months (Table 1.3).

Laboratory Screening for HIV Infection 01/01/97 - 31/03/97

There have been 18160 screening tests performed, 8031 (44%) tests were performed on males, 9939 (55%) on females and 190 tests were performed on individuals whose sex was unknown (Table 1.4).

Table 1.1 HIV infection detected in South Australia 1985 - 31/03/97. Exposure category by sex.

	Male		Female		Total	
Exposure Category	**No.**	**%**	**No.**	**%**	**No.**	**%**
Homosexual contact	462	76			462	71
Homosexual contact\IDU	27	4			27	4
Heterosexual contact	24	4	20	41	44	7
IDU	53	9	22	45	75	11
Blood products	7	1	2	4	9	1
Other	3	1	3	6	6	1
Unknown	31	5	2	4	33	5
Total	607		49		656	

Table 1.2 HIV infection detected in South Australia 01/01/97 - 31/03/97. Exposure category by sex.

Exposure Category	Male No.	Female No.	Total No.
Homosexual contact	7	0	7
Heterosexual contact	0	1	1
Other	0	1	1
Total	7	2	9

Table 1.3 HIV infection detected in South Australia 01/01/97 - 31/03/97. Testing history by age at diagnosis of HIV infection.

Testing History	Age			Total
	25 - 29	30 - 39	40+	
No previous test	0	2	2	4
Previous 12 months	2	1	0	3
12 - 24 months	1	0	1	2
Total	3	3	3	9

Table 1.4 Number of HIV antibody tests, by laboratory and sex 01/01/97 - 31/03/97.

Laboratory	Male No.	Female No.	Unknown No.	Total No.
Private	6383	7376	190	13949
Public	1648	2563	0	4211
Total	8031	9939	190	18160

Table 1.5 Number of new diagnoses of HIV infection by sex[1] and State/Territory, cumulative to 31 December 1996, and for two previous yearly intervals. (From Australian HIV Surveillance Report April 1997; 13, 2:15).

STATE/ TERRITORY	1 Jan 95 - 31 Dec 95		1 Jan 96 - 31 Dec 96		Cumulative to 31 Dec 96			
	Male	Female	Male	Female	Male	Female	Total	Rate[2]
ACT	15	2	7	1	176	18	194	63.1
NSW[3]	404	35	358	30	10348	476	12883	208.1
NT	1	0	6	0	86	4	90	50.6
QLD	108	11	153	9	1710	98	1813	54.0
SA	30	1	42	1	599	44	643	43.5
TAS	6	0	3	0	78	4	82	17.3
VIC[4]	157	11	172	14	3499	178	3714	81.8
WA	44	12	42	8	801	76	880	49.9
TOTAL[5]	**765**	**72**	**783**	**63**	**17297**	**898**	**20299[6]**	**111.0**

1. Thirty one people (14 NSW, 5 QLD, 9 VIC and 3 WA) whose sex was reported as transgender are included in the total column.
2. Rate per one hundred thousand current population. Population estimates by sex, State/Territory and calendar interval from *Australian Demographic Statistics* (Australian Bureau of Statistics).
3. Cumulative total for NSW includes 2,045 people whose sex was not reported.
4. Cumulative total for VIC includes 28 people whose sex was not reported.
5. Cumulative total for Australia includes 2,073 people whose sex was not reported.
6. Estimated number of new diagnoses of HIV infection, adjusted for multiple reports, was 16,150 (range 15,200 to 17,100). Reference: Law MG, McDonald AM and Kaldor JM. Estimation of cumulative HIV incidence in Australia, based on national case reporting. *Aust NZJ Public Health* 1996; 20: 215-217.

Table 1.6 REPORT FROM WHO WESTERN PACIFIC REGION

AIDS and HIV in the WHO Western Pacific Region by country; based on reports available at 31 December 1996.

COUNTRY/ AREA	CUMULATIVE AIDS CASES				AIDS Rate[1]	Cumulative Diagnoses HIV
	Male	Female	Children <13 Years	Total		
American Samoa	0	0	0	0	0.0	0
Australia	6993	282	42	7296	39.9	20299
Brunei	9	0	0	9	3.1	387
Cambodia	28	14	27	406	4.2	7705
China	109	8	0	117	0.0	3341
Cook Islands	0	0	0	0	0.0	0
Fed. S. Micronesia	2	0	0	2	1.8	2
Fiji	2	1	0	8	1.0	35
French Polynesia	7	2	0	54	24.9	164
Guam	39	3	0	42	29.6	96
Hong Kong	225	20	5	245	4.2	776
Japan	1332	115	0	1447	1.2	3965
Kiribati	2	0	0	2	2.6	12
Laos	22	10	1	33	0.7	157
Macao	7	2	0	9	2.2	143
Malaysia	543	37	7	580	3.0	19019
Marshall Islands	1	1	0	2	3.8	9
Mongolia	0	0	0	0	0.0	1
Nauru	0	0	0	0	0.0	1
New Caledonia	40	10	2	50	26.9	138
New Zealand	572	28	4	598	17.5	1167
Niue	0	0	0	0	0.0	0
N. Mariana Islands	2	0	0	6	10.4	10
Palau	1	0	0	1	5.8	1
Papua New Guinea	113	108	5	221	5.4	563
Philippines	187	108	7	295	0.4	861
Rep. of Korea	56	7	0	63	0.1	623
Samoa	4	2	1	6	3.7	9
Singapore	253	16	1	269	9.2	558
Solomon Islands	0	0	0	0	0.0	2
Tokelau	0	0	0	0	0.0	0
Tonga	6	0	0	6	6.1	9
Tuvalu	0	0	0	0	0.0	0
Vanuatu	0	0	0	0	0.0	0
Vietnam	587	66	1	701	1.0	5001
Wallis and Futuna	1	0	0	1	7.1	2
TOTAL	**11143**	**840**	**103**	**12469**	**0.8**	**65056**

1. AIDS cases per 100,000 total current population.

HEPATITIS C SURVEILLANCE IN SOUTH AUSTRALIA

Hepatitis C Medical Notification 01/01/97 - 31/03/97

Laboratory notifications of positive hepatitis C antibody tests were received for 336 individuals in the first quarter of 1997, of these, 312 (93%) individuals were also notified by medical practitioners. Amongst the 312 medical notifications received, 120 (39%) individuals were reported as never having a previous test, 81 (26%) previously had a positive test for Hepatitis C antibodies, 18 (6%) individuals were reported as having a previous negative test and the testing history was unavailable in 93 (30%) cases. Of the 18 individuals with a previous negative test, 12 were incident cases (defined by a negative test in the preceding 12 months or acute clinical illness). Two of the incident cases reported an acute illness involving jaundice within the last 12 months.

Among the 231 individuals who tested positive for hepatitis C antibodies for the first time in 1997, 139 (60%) reported past and/or present injecting drug use, 15 (6.5%) reported blood transfusion/receipt of blood products as their only risk factor, tattoos accounted for 13 (5.6%) and no exposure was identified in 44 (19%) cases reported (Table 2.1).

The majority of males, (88%) were aged between 20 and 49 years, and 59% of women were aged between 20 and 39 years (Table 2.2).

Hepatitis C screening tests were performed on 7030 (47.7%) males and 7558 (51.2%) females, 155 tests were performed on individuals whose sex was not stated (Table 2.4).

Table 2.1 Medical notifications for individuals who tested hepatitis C antibody positive for the first time during the period 01/01/97 - 31/03/97. Exposure category by sex.

	Male		Female		Total	
Exposure Category	**No.**	**%**	**No.**	**%**	**No.**	**%**
IDU*	93	62	46	56	139	60
Blood transfusion/blood products	9	6	6	7	15	6
Tattoos	10	7	3	4	13	6
Other	8	5	12	15	20	9
Unknown	29	20	15	18	44	19
Total	149		82		231	

* includes those individuals whose exposure category is IDU, IDU/tattoos, IDU/tattoos/blood transfusion and IDU/blood transfusion.

Table 2.2 Individuals who tested positive for hepatitis C infection for the first time 01/01/97 - 31/03/97. Age group by sex.

Age Group	Male No.	Male %	Female No.	Female %	Total No.	Total %
Under 10	0	-	3	4	3	1
10 - 19	5	3	3	4	8	4
20 - 29	42	28	23	28	65	28
30 - 39	59	40	26	31	85	37
40 - 49	29	20	9	11	38	16
50+	14	9	18	22	32	14
Total	149		82		231	

Table 2.3 Cases of hepatitis C infection acquired in the previous 12 months. Exposure category by sex.

Exposure Cateogry	Male No.	Female No.	Total No.
IDU	9	2	11
Unknown	1	-	1
Total	10	2	12

Table 2.4 Summary of laboratory screening for hepatitis C antibodies, by sex. 01/01/97 - 31/03/97

Laboratory	Male No.	Female No.	Unknown No.	Total No.
Private	2470	3443	0	5913
Public	4560	4115	155	8830
Total	7030	7558	155	14743

HEPATITIS B SURVEILLANCE IN SOUTH AUSTRALIA

Hepatitis B Medical Notification 01/01/97 - 31/03/97

During the first quarter of 1997, 83 hepatitis B medical notifications were received. Of these, 4 were acute clinical cases of hepatitis B infection (Tables 3.1, 3.2). A further 16 were reports of chronic carriers of greater than twelve months duration, who had been previously diagnosed but not notified and 63 were reports of antigen positivity of uncertain duration (Table 3.3).

Of the 63 reports of antigen positivity of uncertain duration, 37 tested surface antigen positive for the first time this quarter and the testing history was unknown for the remaining 26 cases. Among the 37 individuals who tested surface antigen positive for the first time, but were not acute cases, the racial origin of 20 (54%) was reported as being Asian (Table 3.4).

The number of hepatitis B surface antigen tests performed by laboratories for this quarter is shown in Table 3.5.

Table 3.1 Acute cases of hepatitis B infection during the period 01/01/97 - 31/03/97. Risk category by sex.

Risk Category	Male No.	Female No.	Total No.
IDU	1	0	1
Heterosexual Contact	0	1	1
Unknown	2	0	2
Total	3	1	4

Table 3.2 Acute cases of hepatitis B infection during the period 01/01/97 - 31/03/97. Age group by sex.

Age Group	Male No.	Female No.	Total No.
20 - 29	0	1	1
30 - 39	2	0	2
50+	1	0	1
Total	3	1	4

Table 3.3 Hepatitis B infection, case category by sex. 01/01/97 - 31/03/97

Case Category	Male No.	Male %	Female No.	Female %	Total No.	Total %
Acute Infection	3	5	1	3	4	5
Antigen positivity - uncertain duration	41	75	22	79	63	76
Chronic carriers - >12 months duration	11	20	5	18	16	19
Total	55		28		83	

Tables 3.4 Individuals who tested hepatitis B surface antigen positive for the first time during the period 01/01/97 - 31/03/97. Race by sex.

Racial Origin	Male No.	Male %	Female No.	Female %	Total No.	Total %
Aboriginal	3	12	0	-	3	8
Asian	14	54	6	55	20	54
Caucasian	6	23	3	27	9	24
Other/Unknown	3	12	2	18	5	14
Total	26		11		37	

Table 3.5 Laboratory screening for hepatitis B surface antigen, by sex. 01/01/97 - 31/03/97

Laboratory	Male No.	Female No.	Unknown No.	Total No.
Private	2318	4833	0	7151
Public	4636	6558	163	11357
Total	6954	11391	163	18508

GENITAL CHLAMYDIAL INFECTION IN SOUTH AUSTRALIA

Genital Chlamydial Infection 01/01/97 - 31/03/97

There were 258 medical notifications of genital chlamydial infection. Of these cases, 94 (36%) occurred in males and 164 (64%) in females (table 4.1).

The number of genital chlamydia tests performed by laboratories for this quarter is shown in Table 4.2.

Table 4.1 Genital chlamydial infection in South Australia 01/01/97 - 31/03/97. Age group by sex.

Age Group	Male No.	Female No.	Total No.
15 - 19	16	57	73
20 - 24	32	52	84
25 - 29	25	30	55
30 - 34	8	8	16
35 - 39	5	12	17
40+	8	5	13
Total	94	164	258

Table 4.2 Laboratory testing for genital chlamydia in South Australia 01/01/97 - 31/03/97.

	Males		Females	
Laboratory	No.	No. of positives	No.	No. of positives
Private	584	30	2586	75
Public	1365	47	3208	67
Total	1949	77	5794	142

GONOCOCCAL INFECTION IN SOUTH AUSTRALIA

Gonococcal Infection 01/01/97 - 31/03/97

There were 76 cases of gonococcal infection notified in the first quarter of this year (Table 5.1). Of these cases, 47 (62%) occurred in males and 29 (38%) occurred in females.

Table 5.1 Gonococcal infection in South Australia 01/01/97 - 31/03/97. Age group by sex.

Age Group	Male No.	Female No.	Total No.
10 - 14	0	2	2
15 - 19	3	6	9
20 - 24	12	11	23
25 - 29	9	4	13
30 - 34	12	4	16
35 - 39	5	2	7
40+	6	0	6
Total	47	29	76

CLINIC 275 ACTIVITY REPORT

Table 6.1 Clinic 275 - Summary Statistics

Diagnosis	Period 01/01/97 - 31/03/97		
	Male	Female	Total
No illness	513	388	901
HIV	5	0	5
Gonorrhoea	18	2	20
Syphilis	1	0	1
Herpes	34	14	48
Chlamydia	33	22	55
NSU	27	0	27
Warts	197	74	271
Trichomoniasis	0	1	1
Candida vaginitis	0	95	95
Crabs	28	5	33
Scabies	6	0	6
Molluscum	29	7	36
Bacterial vaginosis	0	57	57
Acute hepatitis B	0	0	0
Hepatitis B antigen positive	2	0	2
Hepatitis C infection	11	7	18
Urethral irritation	62	0	62
Balanitis	39	0	39
Non STD illness	149	56	205
Post coital contraception	0	43	43
Abnormal Pap smear	0	41	41
Other/Uncertain	40	34	74
Clinic attendances	2306	1450	
Episodes of care	1123	757	
Individual clients	1069	730	

Note: A client may have more than one diagnosis for an episode of care. An individual client may have several episodes of care each requiring one or more attendances. Data on episodes of care and individual clients are from the computerised casenote system based on date of first visit for an episode of care. Clinic attendances were obtained from the daybook for the time period covered by this report.

Table 6.2 Number of men diagnosed with chlamydia, gonorrhoea or syphilis at C275, by exposure category, 01/01/97 - 31/03/97.

Exposure Category	Chlamydia	Gonorrhoea	Syphilis	Total
Homosexual	0	10	0	10
Homosexual/IDU	0	0	0	0
Bisexual	1	3	0	4
Bisexual/IDU	0	0	0	0
Heterosexual, IDU	2	0	1	3
Heterosexual, overseas contact	1	2	0	3
Heterosexual	29	2	0	31
Other/Unknown	0	0	0	0
Total	33	17	1	51

Table 6.3 Number of men diagnosed with hepatitis C, hepatitis B and HIV infection at C275, by exposure category, 01/01/97 - 31/03/97.

Exposure Category	Hepatitis C	Hepatitis B Previous Exposure	Hepatitis B carrier	HIV	Total
Homosexual	0	12	0	3	15
Homosexual/IDU	0	1	0	0	1
Bisexual	0	4	0	0	4
Bisexual/IDU	0	0	0	0	0
Heterosexual, IDU	10	7	1	0	18
Heterosexual, overseas contact	0	1	0	0	1
Heterosexual	1	12	1	0	14
Other/Unknown	0	0	0	0	0
Total	11	37	2	3	53

* No case of Acute hepatitis B diagnosed during reporting period.
* Previous exposure to hepatitis B refers to previous infection and now surface antibody positive.
* Overseas contact in the previous three months

Table 6.4 Number of women diagnosed with chlamydia, gonorrhoea or syphilis at C275, by exposure category, 01/01/97 - 31/03/97.

Exposure Category	Chlamydia	Gonorrhoea	Syphilis	Total
Heterosexual, IDU	2	0	0	2
Heterosexual, overseas contact	3	0	0	3
Heterosexual	15	0	0	15
Sex Worker	1	0	0	1
Sex Woker/IDU	0	0	0	0
Other/Unknown	1	1	0	2
Total	22	1	0	23

Table 6.5 Number of women diagnosed with hepatitis C, hepatitis B or HIV infection at C275, by exposure category, 01/01/97 - 31/03/97.

Exposure Category	Hepatitis C	Hepatitis B Previous Exposure	Hepatitis B carrier	HIV	Total
Heterosexual, IDU	4	4	0	0	8
Heterosexual, overseas contact	0	0	0	0	0
Heterosexual	0	10	0	0	10
Sex Worker	0	0	0	0	0
Sex Woker/IDU	2	0	0	0	2
Other/Unknown	1	0	0	0	1
Total	7	14	0	0	21

* No case of Acute hepatitis B diagnosed during reporting period.
* Previous exposure to hepatitis B refers to previous infection and now surface antibody positive.
* Overseas contact in the previous three months

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