WEEKLY EPIDEMIOLOGICAL REPORT

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Ministry of Health

231, de Saram Place, Colombo 01000, Sri Lanka
Tele: + 94 11 2695112, Fax: +94 11 2696583, E mail: epidunit@sltnet.lk
Epidemiologist: +94 11 2681548, E mail: chepid@sltnet.lk
Web: http://www.epid.gov.lk

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Critical Appraisal (Part II)

This is the second in a series of two articles on Critical appraisal

Results

It is only worth thinking about what the findings of a study mean if the study design and method are valid. Results are presented in many different ways. In RCTs, cohort studies and case-control studies, two groups are compared and the results are often expressed as a relative risk (for example, dividing the outcome in the intervention group by the outcome in the control group). If the outcome is measured as the odds of the occurrence of an event (for example, being cured) in a group, (those with the event/those without the event), then the relative risk is known as the odds ratio (OR).

If it is the frequency with which an event occurs (those with the event / the total number in that group), then the relative risk is known as the risk ratio (RR). When there is no difference between the groups, the OR and the RR are 1

A relative risk (OR or RR) of more than 1 means that the outcome occurred more in the intervention group than in the control group (if it is a desired outcome, such as stopping smoking, then the intervention worked; if the outcome is not desired, for example death, then the control group performed better). Similarly, if the OR or RR is less than 1, then the outcome occurred less frequently in the intervention group.

Results are usually more helpful when they are presented as risk differences. In this case you subtract the proportion of events in the control group from that in the intervention group. The risk difference can also be presented as the number needed to treat (NNT). This is the number of people to whom the treatment would have to be given –rather than the control – to produce one extra outcome of interest.

There will always be some uncertainty about the true result because trials are only a sample of possible results. The confidence interval (CI) gives the range of where the truth might lie, given the findings of a study, for a given degree of certainty (usually95%certainty). P values report the probability of seeing a result such as the one obtained if there were no real effect. P values can range from 0 (absolutely impossible) to 1 (absolutely certain). A P-value of less than 0.05 means that a result such as the one seen would occur by chance on less than 1 in 20 occasions. In this circumstance a result is described as statistically significant. This does not mean that it is necessarily important.
Clinical relevance is important to consider whether the study is applicable to the decision being made for a particular patient or

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population. Any important differences between the participants in the trial and the patient or population in question that might change the effectiveness of an intervention must be identified.

It is also important to think about whether the researchers considered all the important outcomes. It is no use establishing that patients had less pain but neglecting to observe that they could be dying more often simply because this outcome was not measured.

Many interventions and processes that are used in everyday clinical practice have potential benefits and adverse consequences and it is important that these are weighed against each other judiciously. For example, if one patient has a major bleed for every five patients prevented from having a stroke when patients are given anticoagulants, then this intervention may be beneficial. However, if five patients have a major bleed for every stroke prevented, then the intervention may not be worthwhile. In both cases the treatment prevents strokes, but in the latter, the likelihood of harm outweighs the benefit. Costs are usually not reported in a trial but if a treatment is very expensive and only gives a small health gain, it may not be a good use of resources. Usually, an economic evaluation is necessary to provide information on cost effectiveness, but sometimes a 'back-of-the envelope' calculation can be performed. If the cost of treating one patient and the Number Needed to Treat (NNT) can be established, these values can be multiplied to give a rough idea of the likely order of cost for producing one unit of benefit. Systematic review Decisions are most beneficial when all of the available evidence has been taken into consideration. Given the limited time available to decision-makers, systematic reviews–which collect, appraise and combine evidence – should be used when available. If possible, good quality, up-to-date systematic reviews should be used as opposed to an individual study.

Conclusions

When reading any research – be it a systematic review, RCT, economic evaluation or other study design – it is important to remember that there are three broad things to consider: validity, results, relevance. It isalways necessary to consider the following questions.

- Has the research been conducted in such a way as to minimize bias?
- If so, what does the study show?
- What do the results mean for the particular patient or context in which a decision is being made?

Source-
What is critical Appraisal, available from www.medicine.ox.ac.uk/bandolier/.../what_is_critical_appraisal.pdf

Compiled by Dr. Madhava Gunasekera of the Epidemiology Unit

Table 3 : Water Quality Surveillance
Number of microbiological water samples - October/ 2012

District	MOH areas	No: Expected *	No: Received
Colombo	12	72	60
Gampaha	15	90	27
Kalutara	12	72	NR
NHIS	2	12	NR
Kandy	23	138	NR
Matale	12	72	20
Nuwara Eliya	13	78	NR
Galle	19	114	NR
Matara	17	102	15
Hambantota	12	72	NR
Jaffna	11	66	10
Kilinochchi	4	24	13
Manner	5	30	17
Vavuniya	4	24	45
Mullatvu	4	24	0
Batticaloa	14	84	NR
Ampara	7	42	NR
Trincomalee	11	66	NR
Kurunegala	23	138	NR
Puttalam	9	84	NR
Anuradhapura	19	114	4
Polonnaruwa	7	42	0
Badulla	15	90	65
Moneragala	11	66	94
Rathnapura	18	108	NR
Kegalle	11	66	14
Kalmunai	13	78	NR

* No of samples expected (6 / MOH area / Month)
NR = Return not received

Table 1: Vaccine-preventable Diseases & AFP

10th – 16th November 2012 (46thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2012	Number of cases during same week in 2011	Total number of cases to date in 2012	Total number of cases to date in 2011	Difference between the number of cases to date in 2012 & 2011
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	00	01	00	01	00	00	00	02	02	70	78	- 10.3 %
Diphtheria	00	00	00	00	00	00	00	00	00	-	-	-	-	-
Measles	00	00	00	00	00	01	00	00	00	01	06	60	122	- 50.8 %
Tetanus	00	00	00	00	00	00	00	00	00	00	00	12	24	- 50.0 %
Whooping Cough	00	00	00	01	00	00	00	00	00	01	01	93	50	+ 86.0 %
Tuberculosis	06	13	20	04	21	00	00	07	36	107	193	7818	8515	- 08.2 %

Table 2: Newly Introduced Notifiable Disease

10th – 16th November 2012 (46thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2012	Number of cases during same week in 2011	Total number of cases to date in 2012	Total number of cases to date in 2011	Difference between the number of cases to date in 2012 & 2011
	W	C	S	N	E	NW	NC	U	Sab					
Chickenpox	07	02	19	09	02	14	03	02	07	65	48	4017	3784	+ 06.2 %
Meningitis	02 GM=1 KL=1	00	00	02 JF=1 VU=1	00	01 KN=1	03 AP=3	02 BD=1 MO=1	01 RP=1	11	06	747	774	- 03.5 %
Mumps	05	01	01	03	11	03	03	05	02	34	57	4074	2923	+ 39.4 %
Leishmaniasis	00	00	10 HB=8 MT=2	00	02 TR=2	06 KN=5 PU=1	08 AP=7 PO=1	01 MO=1	00	27	18	1041	730	+ 42.6 %

Key to Table 1 & 2

Provinces: **W**: Western, **C**: Central, **S**: Southern, **N**: North, **E**: East, **NC**: North Central, **NW**: North Western, **U**: Uva, **Sab**: Sabaragamuwa.

DPDHS Divisions: **CB**: Colombo, **GM**: Gampaha, **KL**: Kalutara, **KD**: Kandy, **ML**: Matale, **NE**: Nuwara Eliya, **GL**: Galle, **HB**: Hambantota, **MT**: Matara, **JF**: Jaffna, **KN**: Killinochchi, **MN**: Mannar, **VA**: Vavuniya, **MU**: Mullaitivu, **BT**: Batticaloa, **AM**: Ampara, **TR**: Trincomalee, **KM**: Kalmunai, **KR**: Kurunegala, **PU**: Puttalam, **AP**: Anuradhapura, **PO**: Polonnaruwa, **BD**: Badulla, **MO**: Moneragala, **RP**: Ratnapura, **KG**: Kegalle.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps.

Special Surveillance: Acute Flaccid Paralysis.

Leishmaniasis is notifiable only after the General Circular No: 02/102/2008 issued on 23 September 2008.

Influenza Surveillance in Sentinel Hospitals - ILI & SARI									
Month	Human						Animal		
	No Received	Infl A untyped	Infl B	A(H1N1)pdm09	A(H3N2)	RSV	Pooled samples	Serum Samples	Positives
October	309	4	25	6	21	6	309	705	0

Source: Medical Research Institute & Veterinary Research Institute

Dengue Prevention and Control Health Messages

Check the roof gutters regularly for water collection where dengue mosquitoes could breed.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

10th – 16th November 2012 (46thWeek)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns Received
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	36	8532	0	133	0	8	0	203	0	46	0	176	0	6	0	105	0	5	**8**
Gampaha	86	7143	2	83	0	16	0	58	1	44	12	280	0	22	4	305	0	0	**47**
Kalutara	36	2567	0	101	0	5	1	49	0	28	8	260	0	4	1	34	0	2	**46**
Kandy	34	259	3	117	0	4	0	25	0	56	3	74	1	115	6	118	0	0	**96**
Matale	9	506	5	92	0	5	0	12	0	49	1	41	0	3	1	34	0	0	**92**
Nuwara	7	315	1	178	0	3	1	27	1	9	0	33	1	63	0	18	0	1	**77**
Galle	9	1417	0	119	0	6	0	18	0	17	1	123	3	69	0	4	0	0	**84**
Hambantota	5	547	0	41	0	3	1	9	1	31	3	75	0	54	0	23	0	0	**75**
Matara	26	1689	4	86	0	8	0	19	3	31	7	184	2	78	4	137	0	0	**100**
Jaffna	29	583	13	215	0	14	4	333	0	82	0	2	0	257	0	18	0	1	**100**
Kilinochchi	1	82	2	39	0	2	0	33	0	45	0	4	0	31	0	4	0	1	**25**
Mannar	3	144	4	77	0	4	4	59	0	17	2	26	0	42	0	2	0	0	**100**
Vavuniya	0	84	1	40	0	21	0	13	0	21	0	18	0	3	0	1	0	1	**75**
Mullaitivu	1	25	1	26	0	1	1	14	0	3	0	3	0	5	0	1	0	0	**60**
Batticaloa	5	649	8	264	0	4	0	16	0	307	1	9	0	0	0	9	0	4	**86**
Ampara	1	139	2	89	0	3	0	6	0	13	0	27	0	0	0	3	0	0	**86**
Trincomalee	0	142	8	220	0	2	0	16	0	15	0	39	0	18	0	4	0	0	**58**
Kurunegala	97	2718	10	200	0	17	0	96	0	41	4	141	0	33	0	130	0	4	**96**
Puttalam	47	1416	0	97	0	9	0	12	0	12	0	40	0	16	0	6	0	2	**83**
Anuradhapu	5	353	2	87	0	7	0	13	0	21	3	81	0	24	1	59	0	1	**63**
Polonnaruw	3	236	0	74	0	2	0	4	0	122	0	47	0	3	0	42	0	1	**43**
Badulla	6	346	3	120	0	4	1	51	0	6	0	36	0	115	1	44	0	0	**76**
Monaragala	9	255	51	114	0	6	0	26	0	9	0	64	2	81	0	172	0	2	**91**
Ratnapura	35	3675	6	261	0	25	0	50	0	12	2	287	0	40	4	120	0	3	**78**
Kegalle	21	2461	0	57	0	9	0	26	2	19	2	168	0	61	3	549	0	0	**64**
Kalmune	1	205	0	267	0	2	0	8	0	90	0	9	0	1	0	10	0	3	**54**
SRI LANKA	**512**	**38488**	**126**	**3197**	**00**	**190**	**13**	**1186**	**08**	**1146**	**49**	**2247**	**09**	**1144**	**25**	**1952**	**00**	**31**	**75**

Source: Weekly Returns of Communicable Diseases WRCD).
***Dengue Fever / DHF** refers to Dengue Fever / Dengue Haemorrhagic Fever.
****Timely** refers to returns received on or before 02nd November , 2012 Total number of reporting units 329. Number of reporting units data provided for the current week: 222
A = Cases reported during the current week. **B** = Cumulative cases for the year.

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Comments and contributions for publication in the WER Sri Lanka are welcome. However, the editor reserves the right to accept or reject items for publication. All correspondence should be mailed to The Editor, WER Sri Lanka, Epidemiological Unit, P.O. Box 1567, Colombo or sent by E-mail to **chepid@sltnet.lk.**

ON STATE SERVICE

Dr. P. PALIHAWADANA
CHIEF EPIDEMIOLOGIST
EPIDEMIOLOGY UNIT
231, DE SARAM PLACE
COLOMBO 10