Table 1: Model based economic evaluations

Primary details	Design	Patient characteristics	Interventions	Outcome measures	Results	Comments
Author, Year: Krahn, 1999 Country: US (government funded health care) Funding: Not stated but one author employed by IER manufacturer	Study design: Decision analytic model combing cost estimates with published data on diagnostic yield of each test Time horizon: Not stated but diagnostic pathways likely to last <2 years	Theoretical cohort of 100 patients undergoing cardiac investigations following a first episode of unexplained syncope 40% are assumed to have SHD	1) Holter, Echo, HUT, EER, EPS. 2) As 1) but IER after EPS 3) as 2) but Echo only if presence of SHD uncertain (50%) 4) as 2) but EPS only if SHD present	Patients diagnosed at the end of diagnostic pathway Cost (per patient) of diagnostic pathway (treatment costs not included)	1) 84/100 2) 99/100 3) 98/100 4) 98/100 5) 98/100 1) \$2398 2) \$3100 3) \$2601 4) \$2561	Results presented for incremental costs per cumulative diagnosis associated with IER do not follow from data presented. ICER for 2 vs 1 is \$4680 per additional diagnosis not \$1416 as presented. Univariate sensitivity
Type of analysis: Cost-effectiveness	Discounting: None Perspective: US Societal Cost year: 1995 US\$		if SHD present 5) As 2) but echo only if presence of SHD uncertain (50%) and EPS only if SHD present	Incremental cost per diagnosis (reviewer calculated)	5) \$2287 5 dominates 1, 3, and 4. 2 vs 5 = \$813,000	shows large uncertainty in cost and diagnostic yield but does not present uncertainty in incremental cost per additional diagnosis
Author, Year: Simpson, 1999 Country: Canada (government funded	Study design: Decision analytic model combing cost estimates with published data on diagnostic yield of	Theoretical cohort of 100 patients undergoing cardiac investigations following a first episode of	1) Holter, Echo, HUT, EER, EPS. 2) As 1) but IER after EPS	Patients diagnosed at the end of diagnostic pathway	1) 84.8/100 2) 98.2/100 3) 98.1/100 4) 98.1/100 5) 98.1/100	Order of tests in strategy 6 based on ranking of cost per diagnosis. May not be clinically viable.
Funding: Not stated but one author employed by IER manufacturer	each test Time horizon: Not stated but diagnostic pathways likely to last <2 years	unexplained syncope 40% are assumed to have SHD	3) as 2) but Echo only if presence of SHD uncertain (50%) 4) as 2) but EPS only	Cost (per patient) of diagnostic pathway (treatment costs not included)	6) 98.9/100 1) \$391 - 810 2) \$648 - 1,327 3) \$616 - 1,273	Sensitivity analysis on cost range only

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Type of analysis: Cost-effectiveness	Discounting: None Perspective: Canadian, third party payer Cost year: 1997 CDN\$		if SHD present 5) As 2) but echo only if presence of SHD uncertain (50%) and EPS only if SHD present 6) EER, HUT, Holter, EPS if SHD, IER, Echo, EPS if no SHD	Incremental cost per diagnosis (reviewer calculated)	4) \$891 – 1,168 5) \$565 – 1,122 6) \$455 – 1,032 6 dominates 2 - 5 6 vs 1 = \$425 to \$1566 5 dominates 2 to 4. 5 vs 1 = \$1279 – 2338	
Author, Year: MSAC. 2003 Country: Australia (government funded health care) Funding: Independent adaptation of model submitted by manufacturer of IER Type of analysis: Cost-effectiveness	Study design: Decision analytic model Time horizon: 3 years Discounting: 5% Perspective: Australian health care perspective Cost year: 2003 AUS\$	Theoretical cohort of patients with recurrent syncope occurring at intervals >1 week, and negative diagnosis following history and PE (BP and ECG), plus negative EER (or EER inappropriate) and no structural heart disease or low risk of sudden cardiac death	2) Standard care (no further ECG monitoring in the majority of patients)	Diagnosis (tachy/bradycardia) Successful treatment QALY gain Incremental costs: Diagnostic testing Treatment of brady/tachycardia Treatment of injury ICERS: cost per diagnosis, cost per successful treatment cost per QALY	1) 33% 2) 0% 1) 74%, 2) 0% 1) vs 2) 0.09 QALYs Incremental costs: Diagnostic: \$4,419 Treatment: \$696 Injury: \$970 Total: \$4,145 Total incremental: \$12,560 \$16,973 \$44,969	Univariate sensitivity analysis has range of \$23,555 - \$76,132 It is unclear what evidence has been used to estimate proportion of patients successfully treated and model is sensitive to this outcome Utility scores based on EQ-VAS which may not reflect preference based valuation

Table 1: Trial based economic evaluations

Primary details	Design	Patient	Interventions	Outcome measures	Results	Comments
		characteristics				

Author, Year: Rockx, 2005 Country: Canada (government funded health care) Funding: No conflict identified Type of analysis: Cost-effectiveness	Study design: RCT with optional cross- over Discounting: None Perspective: Third-party payer Cost year: 2003 CND\$ converted to 2005 \$US	Patients (N=100) referred for ambulatory monitoring (mostly from primary care) with symptoms of syncope and/or presyncope. This is described by the authors as "community acquired syncope" to reflect the fact that it is unlikely to include high risk patients who would be admitted and investigated promptly.	1a) 1 mth of external event recorder 1b) as for 1a) but with cross over to 48 hour Holter if failed activation or no recurrence during 1mth 2a) 48 hour Holter monitoring 2b) As for 2a) with cross over to 1 mth external event recorder if no symptom recurrence during 48hr	Symptom rhythm correlation defined as arrhythmia recorded during symptoms (arrhythmia diagnosis) or normal sinus rhythm recorded during symptoms (arrhythmia excluded). Cost per patient (treatment costs not included) Incremental cost per additional diagnosis	1a) 31/49 1b) 31/49 2a) 12/51 2b) 25/51 1a) \$533.56 1b) \$551 2a) \$175.18 2b) \$481 1a) vs 2a) \$902 per additional diagnosis	Only 22% of those offered cross-over following EER and 74% of those offered cross-over following Holter monitoring took up the option of further monitoring. This may reflect the prevalence of previous negative Holter monitoring in this cohort. Hoch 2006 reports CEAC with mean ICER of \$1,096 with a 97% likelihood of being with the content of the con
Author, Year: Krahn, 2003 Country: Canada (government funded health care)	Study design: RCT with optional cross-over Discounting:	Patients (N=60) with recurrent unexplained syncope (or first episode with injury) referred for cardiovascular investigation.	1a) 1 year IER monitoring 1b) As for 1a) with cross over to comparator (without EER) if undiagnosed	Diagnosis: defined as symptom / rhythm correlation for IER and standard criteria for other tests.	1b) vs 2b) \$500 per additional diagnosis 1a) 14/30 1b) 15/30 2a) 6/30 2b) 14/30	Only 31% offered cross over after IER and 88% offered cross over after conventional testing took up further monitoring.
Funding: Devices provided by manufacturer Type of analysis: Cost-effectiveness	Perspective: Societal (direct medical costs only) Cost year: 2002 CND\$	Assessment: Postural BP, 24hour ECG and echo prior to enrolment. Excluded if LV ejection fraction <35%, unlikely to survive 1 year or presentation typical of neurally mediated at baseline	2a) Conventional testing consisting of EER (2-4 weeks), HUT and EPS 2b) As for 2a) with cross over to IER if undiagnosed	Cost per patient (treatment costs not included) Incremental cost per additional diagnosis	1a) \$2,731 1b) \$2,937 2a) \$1,683 2b) \$3,683 1a) vs 2a) \$3,930 per additional diagnosis 1b) dominates 2b)	
Author, Year:	Study design: RCT	Patients presenting	1) IER with automatic	Time to ECG	HR: 8.98 (3.17 –	Cost of treating

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Farwell 2004 (Farwell 2006 reports final	D (; NII)	acutely with recurrent syncope (>2 in past	and patient activation (n=103 with 2 lost to	diagnosis	25.19, p<0.0001)	diagnosed cause and costs associated with	
results)	Perspective: NHS local estimates	12 mths) and no diagnosis following	follow-up)	Time to first recurrence	HR: 1.12 (0.71-1.78, p=0.62)	IER monitoring not estimated.	
Country: UK NHS	Cost year: 2000-2001	history, PE, ECG,		Time to second recurrence	HR 0.88 (0.43 -1.80, p=0.44)	Resource use not reported separately from costs	
Funding: IFP		electrolytes, plasma glucose, Holter		Time to ECG guided therapy	HR: 7.9 (2.8 – 22.3, p<0.0001)		
Funding: IER manufacturer	Mean follow-up 276 days (+-134), minimum of 6 mths	monitoring (if cardiac cause suspected)., CSM and HUT.		QoL (SF-12 and VAS)	No sig difference at 0, 3, 6 or 12 mths		
Type of analysis: RCT reporting costs	Discounting: none	Patients with SHD and patients requiring		Mean difference in costs (2 minus 1):			
, ,	Discounting, none	cardiac pacing		Investigation	£61.4 (£35.2-92.9)		
		following CSM and HUT were excluded.		Hospitalisation	£747 (£72.8-2730)		
		HUT were excluded.		Total (excl IER cost and treatment of diagnosed cause)	£809 (£123-2770)		
				diagnosed cause)	IER device £1350		
Author, Year:	Study design: RCT	Patients presenting	1) IER with automatic	Time to ECG	HR: 6.53 (3.73 –	Cost of treating	
Farwell 2006 (Farwell		acutely with recurrent	and patient activation	diagnosis	11.4, p<0.0001)	diagnosed cause and	
2004 reports intermediate results)	Perspective: NHS local estimates	syncope (>2 in past 12 mths) and no diagnosis following history, PE, ECG, FBC, urea and electrolytes, plasma glucose, Holter	12 mths) and no follow-up)	(n=103 with 2 lost to follow-up)	Time to first recurrence	HR: 1.03 (0.67-1.58, p=0.9)	costs associated with IER monitoring not estimated.
Country: UK NHS	Cost year: 2000-2002		2) Conventional	Time to second recurrence	p=0.04 (longer for IER)		
•			testing (n=98 with 1 lost to follow-up)	Time to ECG guided therapy	HR: 6.53 (3.73 – 11.4, p<0.0001)	Resource use not reported separately	
Funding: IER manufacturer	Median follow-up	monitoring (if cardiac		QoL (SF-12 and	No change in SF-12	from costs	
	17mths (IQ 9-23 mths)	cause suspected)., CSM and HUT. Patients with SHD		VAS)	Significant increases in VAS, p=0.03		
Type of analysis: RCT reporting costs	Discounting: none	and patients requiring cardiac pacing		Mean difference in costs (2 minus 1):	·		
		following CSM and		Investigation cost	£70.1 (£40.3-99.3)		
	HUT were excluded.		Total cost (excl IER cost and treatment of diagnosed cause)	No sig difference, p=0.28			