

PHARMACIST SUPERVISED PATIENT SELF TESTING OF WARFARIN THERAPY: ECONOMIC EVALUATION

JAMES GALLAGHER





Economic evaluation of a randomized controlled trial of pharmacist-supervised patient self-testing of warfarin therapy

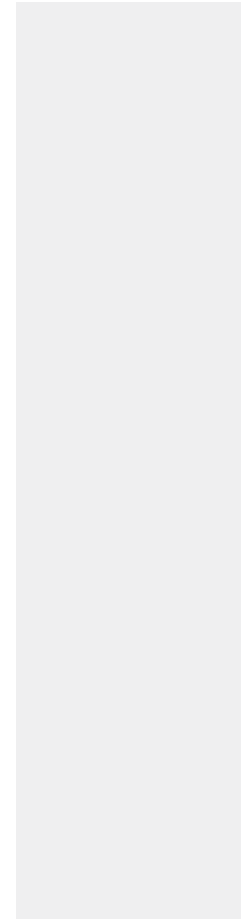
J. Gallagher^a MPharm, S. Mc Carthy^a PhD, N. Woods[†] PhD, F. Ryan[‡] PhD, S. O' Shea[§] MB BCH BAO and S. Byrne^a PhD

^aClinical Pharmacy Research Group, School of Pharmacy, University College Cork, Cork, [†]Centre for Policy Studies, University College Cork, Cork, Ireland,

[‡]McGee Pharma International, Dublin, and [§]Department of Haematology, Cork University Hospital, Cork, UK

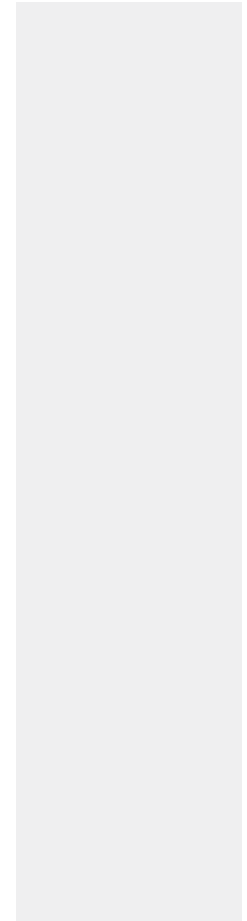
Received 18 March 2014, Accepted 10 September 2014

- Economic evaluation based on an RCT previously conducted by School of Pharmacy researchers
- Original RCT showed improved anticoagulation control
- Is it a cost-effective form of management?



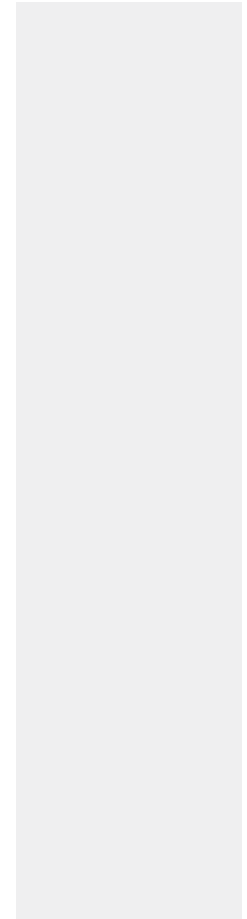
Clinical information

- 2010: 57000 patients still receiving warfarin
- Low medication costs / high monitoring costs
- Management provided primarily in hospital based anticoagulation management services (AMS)
- Narrow therapeutic index / Frequent dose adjustments



Intervention

- Patient self testing (PST) model involves the patient measuring their international normalized ratio (INR) levels using a portable point-of-care (POC) device
- Internet based system used to communicate results to pharmacist
- Pharmacist primarily responsible for patient care



Advantages

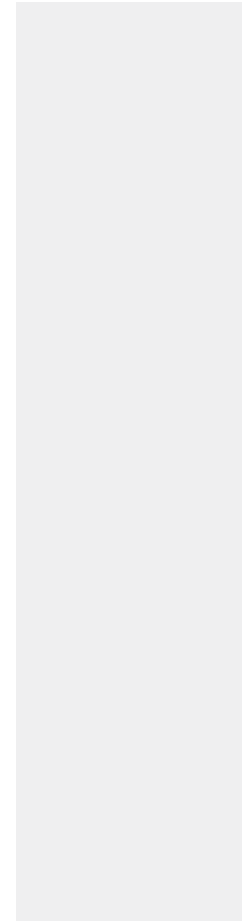
- Move away from hospital based clinics to a primary care setting
- Enhanced clinical outcomes
- Increases patient involvement in management of condition

Disadvantages

- Not suitable for all patients

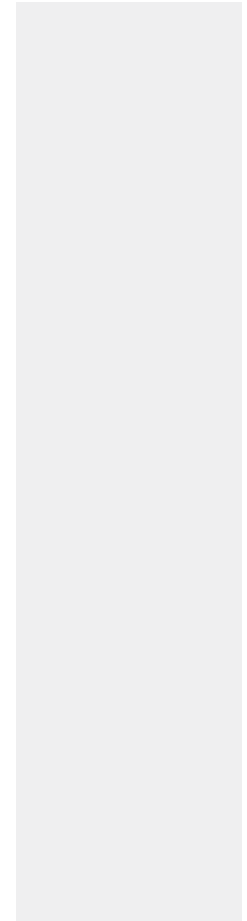
Study method

- Randomised cross over RCT design
- 6 months PST v 6 months usual care
- Primary outcome measure – Time in therapeutic range (TTR)
- 162 patients enrolled
- 132 patients completed both arms



Economic evaluation

- Time horizon: 6 months
- Perspective: HSE
- Costs were informed by recorded trial data and HSE expert guidance
- One-way sensitivity analysis was conducted on all known variables
- Scenario analysis from a societal perspective



Results

	PST	Usual care
Mean % TTR (95% CI)	72 (23.2%)	59 (33.6%)
Median % TTR (IQR)	74 (64.6–81)	58.6 (45.5–73.1)
Mean INR tests/ patient (SD) (Range)	41.7 (6.6) (24– 60)	10.7 (5.2) (5– 35)
Cost of 6 months of patient management	€226.45	€167.38
Incremental cost of 6 months of PST therapy vs. AMS	€59.07	

Implications

- Higher level of control in comparison with hospital based AMS
- Pharmacists are capable of offering an alternative monitoring environment
- Reappraisal of cost-effectiveness of new oral anticoagulants (NOACs)??

Limitations

- Loading of start up costs into a 6 month measurement period
- Long term outcomes not measured
- Uncertainty surrounding some costs
- Self-selecting nature of study population

Practical Examples

- Patients from original RCT have continued to follow their own self-testing regime
- Independent pharmacist clinics
- Implemented with support from state in multiple jurisdictions



Future

- Demand for enhanced pharmacy services
- Support and investment required
- Movement to fee per service or capitation fee per patient
- Friction with other healthcare professionals
- Overall better patient outcomes

Acknowledgements

- Research supported by grant from Roche Diagnostics
- I would also like to thank the HRB Clinical Research Facility – Cork for their on-going support of my research

Appendix I – Usual care costs

Costs associated with Anticoagulation Management Service group per patient for a six month period (€)*

Item	€
Cost per laboratory INR test ^a	2.00
Medical Staff ^{ab}	8.08
Nursing ^{ac}	62.67
Clerical Officer ^a	8.17
Senior Medical Scientist ^a	9.43
Phlebotomy ^a	52.51
Healthcare Assistant ^a	5.11

* - Costs calculated based on internal CUH data and expert guidance

a – Mean cost per patient per 6 month period

b – Four senior house officer hours and three consultant haematologist hours per week

c- One whole time equivalent (WTE) clinical nurse specialist and 2.5 WTE's staff nurse

Appendix II – Intervention costs

Costs associated with Patient self-testing group (€)

Item	€
Cost per Coaguchek strip	3.66
Lancets (200)	12.62
Pharmacist supervision ^a	16.36
Cost of education session per patient	15.00
Coaguchek® XS Meter (Purchase cost) ^b	588.00

a – Mean cost per patient per 6 month period

b – Roche Diagnostics. Only included in sensitivity analysis

Appendix III – Sensitivity analysis

One-way sensitivity analysis on incremental cost of 6 months of PST therapy versus AMS

Variable	€
Testing frequency	
- Minimum value 95% CI	34.92
- Maximum value 95% CI	83.23
Point of care device reimbursement	
- 5 Year Straight Line Depreciation	176.68
AMS Staff *	
- Minimum value (15% of workload)	-13.91 (Dominant)^
- Maximum value (5% of workload)	132.07
Societal perspective	-13.44 (Dominant)^
Excluding pharmacist training	44.08

* Based on expert guidance, sensitivity analysis of +/- 50% was applied

^ This scenario was both less costly and more effective in comparison with management at AMS. Therefore, PST is dominant over usual care.