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Improving economic evaluations in stroke: a report from the ESO Health Economics Working Group

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ESO HEWG Survey Questions

PROTOCOLS
1) Do you have a standard protocol for economic evaluations?
[Yes / No]

If yes, - 1b) Would you be willing to share your protocol or summary of a protocol?
[Yes / No]
1c) Would others need permission to use it?
[Yes / No]
[free text]

2) Indicate standard headings that you believe should be included in an economic protocol
[Tickboxes]
- Population
- Research question
- Primary and secondary outcomes
- Treatment groups
- Perspective (E.g. societal, health-care system)
- Study design (E.g. parallel to RCT, simulation model)
- Economic study design (E.g. cost-utility analysis)
- Economic model
- Reference year
- Time horizon
- Discounting
- Costs collected
- Data collection methods
- Subgroup analysis
- Sensitivity analysis
- Funder

3) What other information should be provided in a protocol for an economic evaluation?
[free text]

4) Is the information you provide on a protocol guided by a checklist or framework?
[Yes / No]

If yes, - 4b) State the checklist or framework
[free text]

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RESOURCE USE DATA
5) Do you have a standard resource-use questionnaire for economic evaluations?
[Yes / No]

If yes, - 5b) Would you be willing to share the standard resource-use questionnaire template?
    [Yes / No]
    5c) Would others need permission to use it?
    [Yes / No]
    [free text]

6) What do you think are important data that should be captured on a standard resource use questionnaire?
[Tickboxes]
- Place of residence
- Change in living arrangements
- Hospital presentations
- Rehabilitation (inpatient/outpatient)
- Family physician contacts
- Specialist contacts
- Private therapy
- Community services
- Aids and equipment
- Home modifications
- Respite care
- Employment/volunteer work
- Carer employment/volunteer work
- Medications

7) What other resource-use information should be captured on a resource use questionnaire?
[free text]

8) What level of detail is captured for these items on the resource use questionnaire (E.g. number of contacts, duration of contacts, out-of-pocket costs)?
[free text]

9) Are there routinely collected clinical/demographic data that should be used to estimate resource use?
[Tickboxes]
- First ever or recurrent stroke
- Stroke type
- Discharge destination

10) What other routinely collected clinical/demographic data should be collected for estimating resource use?
[free text]

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PATIENT-REPORTED OUTCOME MEASURES
11) Which patient reported outcome measures do you collect for economic evaluations?
- SIS
- Modified Rankin Scale
- EQ-5D-3L
- AQoL
- Other (please specify)

12) If you collect the modified Rankin Scale, is it collected as an ordinal scale?
[Yes / No]

EXISTING DATASETS
13) Have you collected or do you have access to any data used in economic evaluations (e.g. patient-level cost data)?
[Yes / No]

If yes,
14) Please describe the dataset:
[free text responses]

15) What was the purpose of the data when originally collected?
[free text]

If yes, - 15b) Would you be willing to share the data?
[Yes / No]
15c) Would others need permission to use it?
[Yes / No]
16) What is the perspective of the data collected?
- Hospital/health service
- Government
- Societal
- Private
- Patient

17) What is the structure and format of the data (e.g. Microsoft Excel)?
[free text]

18) Please provide any publications where the data are reported
[free text]

ECONOMIC MODELLING
19) Have you used modelling for economic evaluations?
[Yes / No]

20) What kind of model and what software was used for the creation of this model?
[free text]

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HEALTH TECHNOLOGY ASSESSMENT
21) Does your country have specific costing guidelines for health technology assessment or other purposes?
[Yes / No]
If yes,
22) Please provide a reference or URL

STROKE GUIDELINES
23) Does the stroke clinical guideline in your country include information about economic evaluations supporting the recommendations?
[Yes / No]

If yes,
24) How is this incorporated in the guidelines?

25) Please provide a reference or URL

26) Please provide any other general comments regarding the survey

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Detailed methods and timeline for establishing agreement on a protocol template and guidance document for data collection

We used a modified Delphi technique which is a method for consensus-building with a group of experts whereby an initial questionnaire is used as the basis for obtaining responses which are then summarised and fed back to participants.[1] The most important first step is choosing appropriate participants because this directly relates to the quality of the results generated.[1] The ESO Health Economics Working Group was established via a process of identifying experts or their nominees associated with the ESO who were publishing relevant papers, including industry. An initial group of 53 experts were identified to be potential members of the working group and 10 agreed to be Executive members of the working group (DAC nominated as Chair), while a further 14 were retained as corresponding members. JK and AW were included in the working group as coordinators. The Executive committee was responsible for driving the work program including for this project.

The following process was undertaken to achieve consensus for a protocol template and a guidance document for data collection that could be used to improve the standard of economic evaluations of stroke interventions. Proposed questions for a survey were developed by DAC, JK and AW and presented to 20 members of the working group at the annual meeting at the European Stroke Conference 2017 held in Prague (17/05/2017). Proposed questions were refined into a survey by DAC, JK and AW via email discussions (21/05/2017) and distributed to 26 members of the working group on 11/07/2017. The core questions in the survey focused on protocols for economic evaluations and the data collected for economic evaluations (resource use items included in questionnaires and patient-reported outcome measures) (see Online Supplement). The survey also included questions about resources that could be useful

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to improve economic evaluations of stroke therapies, including access to existing datasets and models used for economic evaluations.

The survey was closed on 16/08/2017 after recipients were given a final reminder on 02/08/2017. Initial survey results were analysed by JK and presented to DAC and AW via email correspondence and a teleconference (09/11/2017). The results of the survey were then discussed during a teleconference with available Executive working group members (n=8) on 27/11/2017. A protocol template and guidance document for data collection were developed based on the survey results. These materials were further refined based on the feedback from the working group by DC and JK and discussed via email (08/04/2018) and a teleconference (24/04/2018) with AW prior to presentation at the annual face to face meeting at the European Stroke Conference 2018 held in Gothenburg, 16/05/2018. The meeting was attended by 9 members of the working group. The draft materials were reviewed, and consensus reached. It was agreed that a manuscript would be prepared as a method for ensuring all working group members contributed to the final scope and presentation of the protocol template and guidance document.

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Protocol summaries of case studies

The Very Early Rehabilitation of Speech (VERSE) trial[2] used standardised questionnaires to collect resource use, and validated questionnaires to collect information on outcomes at routine follow-up assessments conducted at 12 and 26 weeks after stroke. The resource use data collected will enable an economic evaluation from both a societal and health sector perspective at a time horizon of 26 weeks. When there is an absence of data obtained directly from participants and/or the healthcare system, simulation modelling using a range of 'best available' data may be required. In the economic evaluation by Sandercock et al.,[3] a decision analytic model was used to determine the cos-utility of thrombolytic treatment for acute ischaemic stroke from the perspective of the United Kingdom's National Health Service at a 1-year and a lifetime time horizon. Markov modelling was used after the first year. The patient population was based on data obtained for a stroke registry, effectiveness estimates of thrombolysis were taken from a Cochrane systematic review, utility values for each health state were obtained from published literature, and costs were obtained from health services in the United Kingdom and from published literature.

Supplemental table I Case study examples

	A Very Early Rehabilitation in Speech (VERSE) Trial	Sandercock et al, 2004
Population and setting	Patients with acute stroke and aphasia at acute care hospitals and accompanying rehabilitation services throughout Australia	Acute stroke patients admitted to hospital from the Lothian Stroke Register in England
Research question	To determine the cost-effectiveness of an intensive prescribed aphasia therapy compared to non-prescribed and non-intensive aphasia therapy	To estimate the cost-effectiveness of thrombolytic treatment in the UK National Health Service
Outcomes	Cost per 4.4% improvement on the aphasia quotient	Cost per quality adjusted life year gained Estimates of quality adjusted life years gained were obtained directly from patients in the Lothian Stroke Register
Treatment groups	• Intensive prescribed aphasia therapy (VERSE)	• Standard care • Standard care plus thrombolysis •

	• Non-prescribed, intensive aphasia therapy (usual care-plus) • Non-intensive usual care aphasia therapy (usual care)	
Perspective	Societal with the main focus on the health sector, including out-of-pocket costs and productivity	Broad health care and personal social services perspective
Study design / data source	Resource use collected from a randomised controlled trial	Decision analysis model (until 1 year time horizon) and a Markov modelling approach (lifetime time horizon) using published literature and data collected from the Lothian Stroke Register. • Published literature and data on treatment and outcomes from the Lothian Stroke Register, • Published literature for effectiveness estimates of thrombolysis and outcomes • Unit cost information obtained from health services
Economic study design	Cost-effectiveness	Cost utility
Economic model	N/A	Original decision analysis model, but costs of rehabilitation and long-term care obtained from the MEDTAP model.
Reference year	2017, with adjustments between years made using the Total Health Price Index published by the Australian Institute of Health and Welfare	Not stated
Time horizon	26 weeks	1 year and lifetime
Discounting	N/A	6%
Resource use collected	• Hospital presentations (emergency department presentation and hospital admissions) • Rehabilitation (inpatient and outpatient) • Residential aged care • Ambulance transfers • GP services • Rehabilitation services provided at home • Community services • Speech aids and equipment • Private speech therapy sessions • Respite care • Employment • Informal care provided • Therapist time	• Thrombolysis drug costs • Length of stay in hospital • Rehabilitation • Long-term care •

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Data collection methods	Standardised resource use questionnaire administered at 12 weeks and 26 weeks	From published sources
Sub-group analysis	No	No
Sensitivity analysis	Monte Carlo simulation	• One-way sensitivity analysis • Threshold analyses • Monte Carlo simulation
Funder	National Health and Medical Research Council	National Health Service

Standardised resource use questionnaire administered at 12 weeks and 26 weeks

From published sources

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