ASSIST – Assessment and Evaluation Tools for Telemedicine

Executive Summary Report of the ASSIST project

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Statement of originality

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Executive Summary of the ASSIST project

The objective – assessing telemedicine for sustainability

The objective of the ASSIST project was the provision of a comprehensive framework to assess outcomes and impacts generated by telemedicine pilots. Ultimately, the ASSIST assessment framework shall inform the improvement of services and support their migration from telemedicine projects into sustainable services. It thus aims to help project leaders and entrepreneurs in mainstreaming their service. To support this target group practically the project has created a self-assessment tool that reflects the methodological requirements of the assessment framework. To us an assessment framework is a collection of methods for data collection, analysis and reporting forming a consistent whole.

ASSIST – an assessment framework

ASSIST stands out from other assessment frameworks in several aspects. In contrast to Health Technology Assessment (HTA) methods, which focus on summative evaluation for health system decision making, it applies formative evaluation of improvement decisions on the operational level. It supports project managers in making strategic decisions about the telemedicine service by providing them with a complete picture of the service's value system and further affected stakeholders. It allows benefit shifts and veto players to be identified and addressed at an early stage of development. ASSIST allows monitoring of potential service development over time. The following document focuses on the features of the framework.

ASSIST gathered existing experience of socio-economic evaluation of telemedicine and eHealth via an in-depth analysis of 16 assessment frameworks and the study team's own experience from evaluating more than 50 projects.

The starting point of the ASSIST assessment framework is the eHealth IMPACT/EHR IMPACT methodology for evaluation of eHealth services and applications, which builds on Cost-Benefit Analysis (CBA). In several countries CBA is the recommended method for evaluation of public investments. The UK Green Book is an example. The core of the assessment framework is thus quite generic and could be applied to all service implementations and is not restricted to telemedicine and telehealth. CBA looks at all impacts generated by the service whether they are investments, increased effort or improved well being. It turns these impacts into monetary units which makes them comparable. The result of a CBA is the difference between positive impacts (benefits) and negative impacts (costs), which is called the net impact.

The ASSIST assessment framework primarily addresses two domains:

1. Telemonitoring, which is primarily characterised by an end user - the patient- and a treating party - a healthcare organisation like a GP.
2. Telemedicine service between healthcare organisations especially primary care centres and hospitals.

For simplification telemedicine will be used in the following as a general term covering both domains.

Every ASSIST assessment is a comparison between a given status, which the evaluator will use for comparison, and an intervention. A comprehensive understanding of usual care is the best status quo measure. In the case of ASSIST the intervention is not a single point in time but a process of changing from one status to another. It includes development, piloting and scale-up. ASSIST's asset is that is can be used for formative evaluations projecting potential future gains and losses and direct further investment decisions.

An assessment in four steps

ASSIST follows four consecutive steps:

- qualitative analysis of scope and context,
- data collection,
- calculation in monetary terms, and
- results presentation.

1 – Scope and context

During a qualitative analysis the project manager defines the scope and context of the assessment. This includes setting basic boundaries of the service, such as the participating and affected stakeholders. Stakeholders interact by exchanging values with each other. This defines the service model. The whole service is embedded in an environment that defines enabling or obstructing factors like reimbursement rules, change programmes or budget constraints.

2 – Data collection along stakeholders and types of costs and benefits

In a second step data is collected, which later feed all calculations. ASSIST structures its data along two lines: stakeholders and types of costs and benefits. Different types of costs and benefits are associated with eHealth in general, and telemedicine services in particular. The establishment of services can affect financial resources (cash), redeployed and liberated resources (time), or intangible, non-financial factors that do not have a market price (convenience).

ASSIST has defined 30 stereotypes of stakeholders that are meaningful to telemedicine services. An assessment does not necessarily need to make use of all 30 different types of stakeholders. Most assessments only involve four or five of them such as a tele service centre, a health provider organisation, a payer organisation, and patients. For other evaluations it might be meaningful to add informal careers, medical transportation services or pharmaceutical industry.

All three cost types and types of stakeholders must be accounted for in the socio-economic assessment of telemedicine projects. This is because all of them influence the incentive structures among stakeholders, and help to identify who benefits and who pays, with an impact on potential business models. Even non-financial effects, such as irritation or discomfort and feeling of safety and inclusion, can be critical to the probability of successful transformation of pilots into routine services. New services come at a cost, such as increased documentation effort. A benefit may be less hospital admissions. If the benefit is not with the same stakeholder who has to bear the costs a benefit shift occurs; an important reason for system failure.

Each stakeholder has its own set of pre-defined indicators covering the most important impacts occurring in telemedicine. In total ASSIST has defined 339 indicators for its 30 stakeholders. An indicator like ‘avoided admissions’ connects the output of the technical system (control of patient’s weight) with outcomes (better health through close control) and their impact on a stakeholder (less or completely avoided time in hospital). This is an impact on the patient who doesn’t need to stay in the hospital, and for the hospital which does not need to provide the service and may lose income and also on the health insurance organisation which saves money as care didn’t need to take place. Indicators might or might not apply in the specific case. Admissions will not be avoided in every case. Maybe only the time spent in hospital is shorter, but with the proposed indicators ASSIST wants to make the users think whether this impact occurs or not. Developing and refining this indicator set was the biggest challenge of ASSIST as it needed to be generic enough to cover all conceivable configurations of services and to be specific enough that the user is not overwhelmed with random indicators that do not fit his situation.

3 – Calculation in monetary terms

The monetary value of each indicator is calculated from the data collected in the previous step. This means that all estimates have the same unit and can be compared. The cost and benefits are added for each stakeholder group and discounted to present values to adjust for different intervals of investment.

Depending on the maturity of the project, data can either be available, need collection or need estimation. Before, however, investing in the collection of primary data the ASSIST framework allows for uncertainty in the available data. It does not understand its data as singular points but as distributions of likely values. Depending on the data quality, the variance can be larger or smaller. A guess by the project manager can be assumed to have a larger variance than the results of a clinical trial. A Monte-Carlo analysis draws a random sample from these distributions and calculates all likely outcomes.

4 – Analysis of performance

The final step of the assessment is the calculation and analysis of performance measures, which include overviews of the overall socio-economic performance and sub-analyses of the financial performance in aggregate and for each stakeholder. The aim is to help users identify affordability aspects, financial risks, and points of highest impact, enabling better decision making and project guidance. Due to the Monte-Carlo Analysis project managers are able to see whether their investment is at risk already under fortunate conditions or only under unfortunate conditions and whether a return on investment is still feasible or only delayed.

Due to all impacts being converted in monetary term all indicator and performance measures can be compared to each other. This allows options to be comparable as well as comparing the impacts on different stakeholders. In this way, an ASSIST assessment provides a clear information base for decision making and matures with progress of the venture.

ASSIST – An ESA sponsored project

ASSIST was a two year project funded by the European Space Agency. It covered the development and validation of the ASSIST assessment framework and Excel tool-kit. Giving non-health economist access to expert knowledge via an easy to use tool was a major aim of the project. The validation showed that ASSIST can be very beneficial for projects but the initial effort required in learning to handle the tool could be reduced. We aim to progress in that direction without giving up the aim of rigours, scientific results.