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## CONFERENCE ABSTRACT

### Review of high quality economic evaluations of telemedicine

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**Introduction:** Telemedicine has been suggested as solution to the demographic challenges that the health care sector in many European countries are facing. The basis of this suggestion is reviews of studies of tele- medicine interventions, and these reviews often find that telemedicine is able to reduce the costs per patient. However, a large proportion of the economic studies of telemedicine suffering from methodological weaknesses making them inadequate for drawing conclusions about the economic potential of telemedicine solutions. The objective of this study was therefore to examine the results from high quality economic evaluation of home monitoring for patients with chronic diseases in order to identify the true costs of tele-medicine applications.

**Methods:** High quality economic evaluations are here defined as economic evaluations based on randomised controlled trials that include description of data collection, mean use of resources per patient, prices and costs in accordance with the Drummond et al. (2005) guideline for economic evaluation. Economic evaluations published before August 2010 was collected from a systematic review of telemedicine studies by Wootton (2012). Economic evaluations published after August 2010 was identified by a systematic literature search in the PubMed database. Inclusion criteria were economic evaluation of telemedicine based on randomized controlled trials. The results with regard to the estimated costs per patient were synthesized qualitatively and quantitatively by meta-analyses.

**Results:** 26 economic evaluations were found by Wootton et al. (2012) and in the Pubmed search 58 studies were identified. Of these nine economic evaluations of high quality of home monitoring for patients with chronic diseases were identified. Six of the nine studies (67%) found higher costs when telemedicine in used, and meta-analysis showed a statistical significant increase in total costs per patient of DKK 907 (p value = 0.04). No clear tendency was observed with regard to the types of costs that was reduced or increased when a telemedicine intervention was introduced. However, meta-analysis showed significant cost savings for emergency department visits of DKK 121 per patient (p value = 0.02). Investment costs were found to comprise 41 to 65% of the total intervention costs.

**Discussion:** This review is focusing on the estimated costs from high quality economic evaluations of home monitoring for patients with chronic diseases. The study shows that telemedicine is often associated with higher costs per patient, mainly because of high costs of investment in telemedicine devices. This indicates that more attention should be given to costs and price of the telemedicine devices.

Notice that the study was not designed to address questions of cost-effectiveness as only the cost side was studied. Thus, studies showing an increase in the costs per patient can still be describing a cost-effective technology if the intervention is effective. In addition the definition of high quality economic evaluations can be discussed.

The literature search identified relatively few studies of high quality indicating a continuing need for more and better economic evaluations of telemedicine based on randomized controlled trials - not to forget the need for clear and transparent reporting of results. A concluding point to be noted is that statements of the economic potential of telemedicine *must* be based on methodological sound studies.

