Cost effectiveness and cost utility of the noncoding blood glucose meter CONTOUR TS
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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
This study assessed the cost-effectiveness of manually versus automatically coded blood glucose meters, for diabetic patients requiring intensive glucose-lowering therapy. The authors concluded that automatically coded meters appeared to be superior to manually coded meters, from both the payer and the public payer perspectives. The methods were valid, but the clinical sources were not described and the validity of the authors’ conclusions cannot be fully judged.

Type of economic evaluation
Cost-effectiveness analysis, cost-utility analysis

Study objective
This study assessed the cost-effectiveness of manually versus automatically coded blood glucose meters for diabetic patients requiring intensive glucose-lowering therapy.

Interventions
The automatically coded blood glucose meter, the CONTOUR TS system, was compared against the conventional manually coded blood glucose meters.

Location/setting
Poland/community.

Methods
Analytical approach:
The analysis used a model based on a Markov process, with a 26-year time horizon. The authors stated that the analysis was carried out from the perspective of the public payer, which was the National Health Fund (NHF), and that of the payer, which included the patient and the NHF.

Effectiveness data:
A systematic review of the literature identified three relevant sources for the efficacy of the two types of meter and these data were the key inputs for the model. The long-term transition probabilities for the Markov model were from several other published studies, which were briefly described.

Monetary benefit and utility valuations:
The utility values associated with diabetes were from the Cost Effectiveness Analysis Registry Database at the Center for the Evaluation of Value and Risk in Health. This database provided quality of life values from the general population and diabetic patients.

Measure of benefit:
The summary benefit measures were life-years for the cost-effectiveness analysis and quality-adjusted life-years (QALYs) for the cost-utility analysis. Both measures were discounted at a rate of 5% per annum.

Cost data:
The economic analysis included various medical costs. Those of hospital procedures, medications, out-patient visits, and rehabilitation were from NHF sources. The per patient costs of reimbursement and medications for diabetes and related complications were from the Ministry of Health and other official Polish sources. Manufacturers’ prices were used for the meters. The number of medical procedures for complications from diabetes was from four Polish medical centres.
and expert opinion. The resource use associated with the treatment of coronary syndromes was based on official
guidelines. All costs were in Polish zlotych and were converted to Euros (EUR) at the average exchange rate for 2008.
A 5% annual discount rate was applied.

Analysis of uncertainty:
Various one- and two-way sensitivity analyses were carried out on the key inputs, which included age, glucose level,
efficacy of meters, discount rate, and price of test strips. Published ranges of values and alternative assumptions were
considered. First-order Monte Carlo analysis was applied to provide a mean and standard error for the model outputs.

Results
In comparison with manual meters, the CONTOUR TS system led to a gain of 0.0017 life-years and 0.0046 QALYs per
patient over 26 years, and saved EUR 14.84 per patient from the public payer perspective and EUR 52.40 per patient
from the payer perspective. The CONTOUR TS system was dominant, as it was more effective and less costly.

The sensitivity analysis showed that these findings were robust. The CONTOUR TS system was more effective in
younger patients. An influential input was the discount rate, but the automatic meter remained the preferred strategy
even when changing the reimbursement patterns for the device.

Authors’ conclusions
The authors concluded that automatically coded blood glucose meters appeared to be superior to manually coded
meters, both from the payer and the public payer perspectives.

CRD commentary
Interventions:
The rationale for the selection of the comparators was clear as the two available meters (automatic versus manual) were
compared.

Effectiveness/benefits:
Some inputs for the model were identified by a literature review, but its methods and conduct were not reported and no
information on the data sources was given. This makes it impossible to judge the validity of these inputs. Appropriate
benefit measures were used to examine the impact of the interventions on the patients’ health, taking into account both
their expected survival and quality of life. The derivation of the utility values for the calculation of the QALYs was not
clear as the authors reported the sources, but did not state the instruments and methods used to elicit the preferences.

Costs:
The cost categories were consistent with the two perspectives. The sources for the unit costs and resource use were
clearly reported and appear to have been appropriate for Poland. The details were given of the costs associated with
some diabetes complications, which were a large proportion of the costs for these patients. The unit costs were
generally not reported separately from the resource quantities, reducing the ability to replicate the analysis. The cost
data were not varied in the sensitivity analyses. Other details, such as price year, currency conversion, and discount rate,
were reported.

Analysis and results:
An incremental approach was appropriately used to examine the difference between treatments. The authors presented
incremental cost-effectiveness and cost-utility ratios, although the calculation of these was unnecessary as the automatic
meter strategy was superior to (more effective and less expensive than) the manual option. The uncertainty was
satisfactorily investigated, but most of the analyses focused on selected inputs to the model. The results of the base case
and the sensitivity analyses were clearly presented and discussed. An appropriate decision model was used to simulate
the natural history of the disease and its management over time. The time horizon was appropriate as it corresponded to
the expected survival of a 53-year-old patient, which was the age of the simulated cohort. The results appear to be
specific to the Polish context and might be difficult to transfer to other settings.

Concluding remarks:
The methods were valid, but the clinical sources were not described and the validity of the authors’ conclusions cannot
be fully judged.

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