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2011 Abstracts

health) were applied to discounted life expectancy at a rate of 3% to generate QALYs. Baseline values for the newborn screening test included sensitivity of 0.84, specificity of 0.97 and a cost of $5.50. The cost-effectiveness threshold was set to $100,000 per QALY. Base-case and 1-way sensitivity analysis of model parameters were performed.

Result: Universal screening as compared to no screening for SCID is more expensive, more effective, and cost effective at $87,081 per QALY (Table 1). For the screening test, at a specificity less than 0.96, it's no longer cost effective, however, sensitivity must be greater than 0.73 for universal screening to be cost effective. The model was quite sensitive to the cost of screening; at a cost of $8.50 per test universal was no longer cost effective.

Conclusion: At baseline, universal screening for SCID is marginally cost effective under our assumptions. The body of literature in this area suggests significant improvement in outcomes in those children with SCID who are identified at birth with a 50.4% reduction in overall mortality. The costs of screening and diagnosis of SCID need additional investigation to clarify whether this cost-effectiveness ratio can be further reduced.

Table 1. Outcomes of Universal Newborn Screening for SCID

	Universal screening	no Screening	Differences
Per 4 million live births			
Costs	$81,129,000	$6,320,000	$74,809,000
QALYs	107,097,232	107,096,376	856
ICER		$87,081/QALY	

ESP-174 OPTIMIZATION OF FOLLOW-UP SCENARIOS FOLLOWING BREAST CANCER

(ESP)—Applied Health Economics, Services, and Policy Research
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Purpose: Breast cancer occurs in about 1 in 9 women in the Netherlands. Every year, 11,000 new cases are registered and about 3,500 women die of breast cancer. Prognosis after primary treatment is improving, leading to an increased number of follow-up visits and increasing workload to physicians. National guidelines currently assign all these patients the same follow-up program: twice a year for 5 years. The present study was undertaken to determine an individualized follow-up program that gives women the follow-up they need and reduces physician workload.

Method: Breast cancer patients were classified according to different risk groups for recurrence based on age, tumor size and lymph node status. We chose follow-up programs with different frequency and length. To determine the most appropriate follow-up program for each patient group we modeled the process of breast cancer in a state transition model, and used discrete event simulation to investigate the effectiveness of various follow-up programs. Follow-up programs are compared based on the number of visits and quality adjusted life expectancy. We simulated 150,000 patients per patient group and follow-up program.

Result: For patients older than 70 years and patients with favorable tumor characteristics follow-up could be minimized to 1 visit. Patients younger than 40 years and patients with unfavorable tumor characteristics can benefit from a more intensive follow-up of twice a year for 5 years. Overall a reduction of 70% of needed follow-up visits can be quickly achieved.

Conclusion: The present study illustrates the potential for individualized follow-up in breast cancer patients. Implementing individualized follow-up can lead to a reduction of number of follow-up visits needed.

QUANTITATIVE METHODS AND THEORETICAL DEVELOPMENTS (MET 1-28)

MET-1 EXPERT ELICITATION TO POPULATE EARLY HEALTH ECONOMIC MODELS OF MEDICAL DIAGNOSTIC DEVICES IN DEVELOPMENT

(MET)—Quantitative Methods and Theoretical Developments
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Purpose: During the development of new diagnostic and therapeutic devices, it is desirable to indicate the cost-effectiveness through modeling and to establish its potential clinical value to guide further developments. However, in these early stages of development, there are usually no or limited clinical data available. Instead elicitation methods involving experts can be used to obtain estimates on uncertain model inputs. In this study, expert elicitation was used as a method to estimate uncertain priors of the diagnostic performance of a new imaging technology, i.e., Photo Acoustic Mammography (PAM). We compared PAM as an alternative to MRI in the detection of breast cancer. Experts are asked to predict the sensitivity and specificity of PAM.

Method: Expert elicitation was used as a method to formulate the knowledge and beliefs of experts about the future performance of PAM and to quantify this information into probability distributions. Using the mathematical approach to elicitation, 13 experts (radiologists specialized in examining MR-images of breasts) estimated the true positive rate (TPR) and true negative rate (TNR) based on existing MRI data (with a TPR of 263 out of 292, and a TNR of 214 out of 308) and specified the mode (the most likely value), the lower, and the upper boundaries (a 95% credible interval). An overall probability density function (PDF) was determined using the linear opinion pooling method in which weighting is applied to reflect the performance of individual experts.

Result: The overall PDF indicated a sensitivity ranging from 56.1% to 86.9%, with a mode of 73.3%. The specificity ranges from 48.1% to 78.2%, with a mode of 64.7%. Experts expressed difficulties making the estimations, as there is not sufficient data about the manner in which PAM visualizes different tumor types.

Conclusion: Using expert elicitation in the absence of clinical data, priors distribution of the range of sensitivity and specificity could be obtained. Theoretically, there data can be fed into early health economic models. However, experts have difficulties estimating the performance based on limited data. Therefore, large clinical trials with PAM should indicate whether these results are valid and expert elicitation could be used in early technology assessment. Before that, the use of the elicited priors in health economic models requires careful consideration.

MET-2 DEVELOPING A COMPLEX AGENT NETWORK MODEL TO PREDICT HIV AND HCV INCIDENCE IN CANADA

(MET)—Quantitative Methods and Theoretical Developments
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