

Cost-Utility of Depression Screening

Valenstein M, Vijan S, Zeber JE, et al. The cost-utility of screening for depression in primary care. *Ann Intern Med* 2001;134:345–60.

Study Overview

Objective. To determine the cost-utility of screening for depression compared with no screening

Design. Nonstationary Markov model.

Setting and participants. Hypothetical cohort of 40-year-old primary care patients assigned to annual screening or no screening followed by usual care. Annual screening consisted of a self-administered questionnaire followed by assessment by a nurse and primary care provider. Other screening frequencies were explored, including screening at each visit (opportunistic screening); 1-time screening; and screening every 2, 3, or 5 years. Patients were followed until age 90 years or death.

Data analysis. The Markov model included 8 major health states: (1) never depressed, (2) history of depression in remission, (3) history of depression still in treatment, (4) significant depressive symptoms, (5) significant depressive symptoms in treatment, (6) major depression, (7) major depression in treatment, and (8) deceased. After entry into the model, patients were assigned to each health state according to its prevalence in a primary care sample; patients were then transitioned between health states at the end of each 3-month Markov cycle. Transition probabilities were based on published data and were dependent on patients' health states in the previous 3 months and on a lifetime history of depression.

Estimates for variables used in the model were obtained from a review of published literature. Mid-range values and those most frequently reported were included in the base case. Sensitivity analyses were performed using the full range of estimates collected from the literature. Important model variables included prevalence of major depression and significant depressive symptoms, incidence of depression, sensitivity and specificity of screening tools, treatment response, hospitalization rate, suicides rate, patient utilities for health states, and referral to a mental health specialist.

Main outcome measures. Costs and quality-adjusted life-years (QALYs). Analysis performed from the perspectives of health care payers included only direct health care costs;

analysis using the societal perspective included direct plus indirect costs (eg, decreased patient productivity, caregiver time).

Main results. From the payer perspective in the base-case analysis, cost-utility ratios compared with no screening were \$225,467/QALY gained for annual depression screening; \$299,890/QALY for opportunistic screening; \$115,930/QALY and \$85,679/QALY for screening every 3 years or 5 years, respectively; and \$45,298/QALY for 1-time screening. When screening frequencies were compared directly, ratios were less favorable; for example, the incremental cost-utility ratio for screening every 5 years versus 1-time screening was \$640,000/QALY (as opposed to \$85,679/QALY versus no screening). From the societal perspective, cost-utility ratios compared with no screening were \$192,444/QALY for annual screening, \$81,686/QALY for screening every 3 years, and \$50,988/QALY for screening every 5 years. One-time screening was most cost-effective, with a cost-utility ratio of \$32,053/QALY versus no screening. When 1-time screening and screening every 5 years were compared, the cost-utility ratio was \$310,909/QALY.

Conclusion. If \$50,000/QALY is used as a reference for cost-utility ratios, 1-time screening for depression is cost-effective but annual and periodic screening are not.

Commentary

This study by Valenstein et al is the first to examine depression screening from a cost-utility perspective. Cost-utility and cost-effectiveness research is difficult to conduct and controversial because of inherent weaknesses. In analytical models, the different variables are assigned values that are derived from other studies, either experimental or observational; if the validity of the original studies is questionable, so is the

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validity of the model. One weakness in Valenstein and colleagues' work lies in their use of an average sensitivity and specificity from 9 screening instruments. Although in practice a provider would use only 1 of these screening tools, the study does not indicate whether 1 tool is superior to the others. Further, some of the authors' cost estimates may not be accurate. Administration of a screening tool was assumed to take only 1 minute—too brief a period, it seems, to be applicable in actual practice. Thus, estimated costs for this variable are probably lower than they would be in the "real world." Costs also vary between geographic areas and between insurance carriers, and the study does not make clear whether these factors were incorporated into analyses. A graphic representation of the authors' decision tree, which was not provided, would have made the study easier to read.

Valenstein et al found a cost-utility ratio of \$45,298 for 1-time screening for depression; this compares favorably with other interventions. Cost per QALY for hypertension treatment to prevent stroke in patients aged 45 to 65 years is \$1400 and for breast cancer screening is estimated at \$8500. (These costs are based on a table of cost-utility published in the *British Medical Journal* in 1993.) Determining whether early diagnosis improves survival, quality of life, or both is also important in cost-utility research. As mentioned by an editorialist [1], a small study has shown that patients are more willing to pay for depression treatment (even at an out-of-pocket cost of up to \$270 per month) than for antihypertensive therapy. This finding does seem to indicate that treating depression improves quality of life. Despite the study's

shortcomings, Valenstein and colleagues should be commended for conducting this difficult analysis.

Applications for Clinical Practice

Depression is a prevalent and costly disease. One out of 10 men and 1 out of 5 women will have a major depressive episode during their lifetime. Despite this high prevalence, screening for depression remains controversial. Some organizations, including the U.S. Preventive Services Task Force [2] and the Canadian Task Force on Preventive Health Care [3], still do not recommend routine screening for depression, while others such as the Veterans Administration recommend general screening. Valenstein et al suggest that 1-time screening, but not annual screening, is cost-effective compared with other interventions. Until further studies are conducted, screening patients every 3 to 5 years would seem reasonable. In addition, screening may be more effective in populations with a higher prevalence and severity of depression (eg, patients at VA clinics). As the authors point out, the cost-effectiveness of more frequent screening would improve if therapy would improve.

References

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3. Canadian Task Force on Preventive Health Care Web site. Available at: <http://www.ctfphc.org>. Accessed 19 Mar 2001.

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