Diagnosis of Advanced-Stage Cancer More Likely in the Uninsured and Medicaid-Insured

Halpern MT, Ward EM, Pavluck AL, et al. Association of insurance status and ethnicity with cancer stage at diagnosis for 12 cancer sites: a retrospective analysis. Lancet Oncol 2008;9:222–31.

Study Overview

Objective. To examine the associations between ethnicity, health insurance status, and stage at cancer diagnosis for patients with 12 types of cancer.

Design. Retrospective review of data from the U.S. National Cancer Database, a hospital-based cancer registry.

Setting and participants. 3,742,407 individuals receiving part or all of their treatment for 12 types of cancer at facilities approved by the Commission on Cancer, a multidisciplinary program of the American College of Surgeons, between 1 January 1998 and 31 December 2004. Types of cancer were identified by International Classification of Diseases for Oncology and histology codes and included breast (women only), colorectal, kidney, lung, melanoma, non-Hodgkin's lymphoma, ovary, pancreas, prostate, urinary bladder, uterus, and thyroid. Insurance status was classified as Medicaid, Medicare, uninsured, or private. Ethnicity was categorized as non-Hispanic white, non-Hispanic black, Hispanic, and other.

Main outcome measure. Association between stage at cancer diagnosis and ethnicity or insurance status. Cancer stage at diagnosis was measured using standard staging protocols for each cancer. After controlling for patient characteristics, stage at cancer diagnosis was compared with variables of interest (ethnicity and insurance status) using 2 models: (1) patients with stage I cancer at diagnosis were compared with patients diagnosed at stage II, and (2) patients with stage I cancer at diagnosis were compared with patients diagnosed at stage III or IV.

Main results. When stage at cancer diagnosis was analyzed with respect to insurance status, patients with Medicaid and uninsured patients were significantly more likely than privately insured patients to be diagnosed with advanced-stage (stage III or IV) cancer. These findings were most pronounced for cancers that could be recognized at early stages with screening or presence of symptoms, such as breast cancer (adjusted odds ratio [OR], 2.6 for Medicaid and 2.9 for uninsured), colorectal cancer (adjusted OR, 1.6 for Medicaid and 2.0 for uninsured), and melanoma (adjusted OR, 3.3 for Med-

icaid and 2.3 for uninsured). When stage at cancer diagnosis was analyzed with respect to ethnicity, black and Hispanic patients were significantly more likely than white patients to be diagnosed with advanced-stage cancer. These findings for ethnicity were most pronounced for melanoma (adjusted OR, 3.3 for black patients and 1.5 for Hispanic patients) and breast cancer (adjusted OR, 1.9 for black patients and 1.3 for Hispanic patients). For both comparisons, the effects were least prominent in cancers for which there are few early diagnostic tests, such as ovarian cancer (adjusted OR, 1.3 for black patients and 0.9 for Hispanic patients; adjusted OR, 1.3 for Medicaid and 1.2 for uninsured) and pancreatic cancer (adjusted OR, 1.1 for black patients and 1.0 for Hispanic patients; adjusted OR, 1.1 for Medicaid and 1.2 for uninsured). Potential interactions were evaluated, but they did not follow any consistent pattern and did not add to the models.

Conclusion. Patients with Medicaid insurance and the uninsured are significantly more likely to be diagnosed with advanced cancers compared with patients with private insurance. Black and Hispanic patients are significantly more likely to be diagnosed with advanced cancers compared with white patients. These differences persist after adjustment for multiple patient-level factors.

Commentary

Previous research suggests that ethnicity, socioeconomic status, and insurance status are associated with cancer staging at the time of diagnosis [1,2]. However, it has been difficult to disengage the individual impact of each of these factors, in part because they are heavily confounded. In this study, Halpern et al analyzed an immense database of approximately 75% of all individuals diagnosed with cancer in the United States. The size of this database has power to detect the smaller, but still important, differences that persisted even after controlling for many potential confounders. Results suggest that black or Hispanic patients and those who are uninsured or Medicaid-insured are significantly more likely than their white or privately insured peers to be diagnosed with cancers that are already at an advanced stage. This should be disturbing news for providers.

The question remains: Can this analysis capture the

complex social and medical factors at work? Because the National Cancer Database does not collect socioeconomic data on individual patients, the study approximated patients' income and level of education by including the proportion of people with high school diplomas and median household income (both collected as categorical data) according to zip code. The use of area-level measures rather than individual measures for income, education, and other indicators is accepted in outcomes research and is often the only form of assessment available given that many cancer databases and other registries do not collect this type of information. Several studies have demonstrated that area-level measures nearly correlate with individual-level measures for a variety of outcomes, including cancer screening, mortality, and low birth weight [3–6]. However, some research suggests that area-level measures based on census block groups provide better metrics than the zip codes used in this study [7].

Another concern is whether the insurance assignments gathered by the registry accurately capture patients' insurance status. An analysis of a California cancer registry showed that when cross-checked against Medicaid files, registry data incorrectly assigned Medicaid patients to other categories in 52% of cases and incorrectly assigned patients from other categories to Medicaid in 2% of cases [8]. The authors concluded that registry data should be cross-checked against Medicaid data when possible.

Even if patients assigned to Medicaid were in fact covered by Medicaid on the day of their diagnosis, this may not reflect what investigators sought to capture. For example, a patient who was uninsured for many years, became ill, and went through the process of obtaining Medicaid eligibility in order to pursue a diagnostic workup might be diagnosed with a late-stage cancer while covered by Medicaid. However, for most of his/her illness (and presumably during missed opportunities for screening or other interventions) the patient was actually uninsured, and prolonged uninsured status may have contributed more to the delay in diagnosis than the ultimate switch to Medicaid. This study does not record the length of time patients had been on Medicaid at the time of diagnosis. There is some evidence that patients with breast or cervical cancer enrolled in Medicaid for 3 months or less before diagnosis were more likely to present with late-stage cancers than patients who had been continuously on Medicaid for a longer period of time [9,10]. These studies have limitations of their own. Many Medicaid programs have requirements for frequent eligibility verification and reenrollment, leading to the problem of Medicaid "churning," in which beneficiaries often lose and regain their coverage. Thus, patients diagnosed with advanced cancers who are listed as having recently joined Medicaid might actually have been enrolled in Medicaid for the majority of their illness but lost coverage due to churning or other fac-

tors. The authors do not report whether newly enrolled patients had lost and regained coverage. Comparing patients who lose and regain their coverage with those who maintained continuous enrollment despite the challenges posed by the Medicaid system may confound these analyses.

Applications for Clinical Practice

The impact of Medicaid enrollment at the time of diagnosis is clearly complex and may require a more nuanced understanding of patients' interactions with the Medicaid system than most registries are able to provide. However, providers who care for Medicaid beneficiaries should be aware that there may be some factors that predispose such patients to delays in cancer diagnosis. These factors are not fully defined and may exist at the level of the health care system, the community, or the individual patient. Providers should maintain a high index of suspicion for undiagnosed cancer and encourage patients to discuss risk factors, screening guidelines, and challenges in access and adherence to appropriate care.

—Review by Emily R. Carrier, MD (New York University School of Medicine, New York, NY) and Nirav R. Shah, MD, MPH

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