A Comparison of Chest X-ray Rates Between Physicians Who Self- refer and Those Who Refer Patients Out: A Case of Inappropriate Utilization?

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Research Objective: Historically, one particular method health care providers have used to enhance income is to have a vested financial interest in a health services related facility and then refer patients there for care. In 1989, in an effort stem the possibility for conflict of interest, Congress adopted a physician self-referral prohibition to entities providing clinical laboratory services. Effective January 1, 1995, this legislation (known as the Stark Amendment) was expanded to include referrals for "designated health services." One exception in the legislation, regarding both ownership and compensation arrangements, includes certain in-office ancillary services. Thus, it is possible for physicians to own and operate medical equipment in their offices and bill for those services rendered. This paper examines, in a fee-for-service environment, whether the rates of chest x-rays ordered by physicians who operate radiological equipment in their office would be higher than their peers who were required to refer patients out for chest x-rays.

Study Design: A retrospective cross-sectional design was used with claims data provided by a large independent practice association (IPA) in Southern California serving approximately 90,000 members in 1999. Chest x-rays were selected as the procedure of choice because it ranked highest on the list of radiological procedures performed. Additionally, while an x-ray is considered essential for assessing the diagnosis of a broken leg, it is not essential for the diagnosis of an upper-respiratory infection, or similar illness. Therefore, it might be expected that physicians who own radiological equipment may provide chest x-rays on questionable cases while their peers will rely on other analytic and subjective means for diagnosis. Claims were aggregated by referring primary care physician (PCP), giving us two groups; (1) PCPs that were the referring provider and also performed the x-ray test (“self-refer”), and (2) PCPs who were the referring physician but not the provider of the service (“refer-out”). A Student t-test was used to assess whether a statistical difference in x-ray rates/100 members existed between the two groups, and 95% confidence intervals were calculated. A subsequent stratified random sample of 50 medical charts was chosen for abstraction from both groups to assess whether the chest x-rays were warranted based on the diagnosis and results on the x-ray report.

Population Studied: Two groups of PCPs: (1) self-referring for chest x-rays (N = 47), and (2) referring-out for chest x-rays (N = 440).

Principal Findings: While the number of PCPs who owned x-ray equipment was much smaller than the group that referred patients out for x-rays, those PCPs who self-referred accounted for 38% of the total number of chest x-rays performed. Adjusting for membership size reveals the considerable difference between the two groups even more so. The self-referring group of PCPs had 2.3 times as many chest x-rays than the referring-out group (7.16/100 vs. 3.09/100). This difference was statistically significant at $p < 0.0001$. Subsequent chart abstraction indicated that over 95% of all chest-rays performed by the self-referring group were superfluous while only 10% were found to be unnecessary in the refer-out group.

Conclusions: The results of this study ostensibly indicate that physicians who have radiological equipment in their office have considerably more chest x-rays performed than their peers who must refer patients out for chest x-rays. The higher rate of chest x-rays in the self-refer group may be explained by: (1) a higher likelihood that PCPs who own radiological equipment use the chest x-ray as a primary diagnostic tool for borderline or questionable respiratory related illnesses than do their peers. (2) patient convenience, and (3) some PCPs who self-refer, may be performing x-rays unwarranted by the diagnosis.

Implications for Policy, Delivery, or Practice: The loop-hole in the Stark Amendment that allows providers to own certain in-office ancillary services, provides incentive for physicians to perform unnecessary services. Similarly, this IPA reimburses physicians on a fee-for-service basis, thereby creating further incentive to over-utilize both necessary and unnecessary services. At the heart of the present study is the fact that these incentives led to the unnecessary exposure of patients to x-ray radiation. These results suggest that a larger scale investigation should be conducted to assess whether changes should be made to the Stark Amendment to reduce the likelihood of systemic abuse and the exposure of patients to unnecessary services.

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