

conscious bias may exist even for CME providers that abide by the strict ACCME guidelines.

Drs Grabois and Webster call for a mandatory rather than voluntary educational requirement, and we agree. Although the intent of our Viewpoint was not to advocate for a new mechanism of funding for research and education, we agree that this needs to be addressed.

One potential solution is the compulsory endowment of educational grant funds from pharmaceutical companies into a centralized distribution center that is managed by FDA or another autonomous entity. These resources can be fairly distributed through a managed process that includes ACCME-approved providers but removes any incentive to unintentionally produce a program that pleases a sponsor. We are confident that parallel models exist that could accomplish the same goals.

The ultimate priorities of the REMS educational program are to maximize the safety of opioid analgesics in both the patient and public health domains while ensuring that patients in pain receive appropriate relief. Although these goals may seem inherently divergent, we hope the newly introduced ER/LA REMS program will succeed in striking a sensible balance in opioid analgesic prescribing. Despite the competing perspectives of advocates on either side, we are sure that this sensible balance can be attained with proper oversight.

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## RESEARCH LETTER

### Trends in the Earnings of Health Care Professionals in the United States, 1987-2010

To the Editor: Understanding trends in physician earnings is important given health care cost growth and proposed Medicare physician fee reductions.<sup>1</sup> National surveys find that annual physician incomes increased 24% between 1982 and 1989<sup>2</sup> and decreased 7.1% between 1995 and 2003.<sup>3</sup>

Other surveys suggest that physician incomes increased only slightly since 2004.<sup>4</sup> However, little is known about how growth in physician earnings compares with other health professionals. Comparing physicians and other health professionals is necessary to assess whether physician labor earn-

ings have outpaced or lagged behind earnings growth of other workers in the health care sector.

**Methods.** We estimated annual earnings and hourly wages of physicians and other health professionals from the Current Population Survey (CPS), a nationally representative monthly survey of approximately 60 000 households. The CPS data are collected by personal and telephone interviews. Respondents must be older than 15 years, noninstitutionalized, and outside of the armed forces.<sup>5</sup> The CPS data were exempt from institutional review board review.

We used data from the March CPS from 1987 to 2010 on occupation, hours worked, self-reported earnings by source, and other demographic information (eg, age, sex). Response rates based on the American Association of Public Opinion Research's standard definitions were high (93.3% across years).

Earnings were defined as total annual labor income plus business income net of expenses, and excluded income from ownership of facilities or medical technologies. Wages were computed by dividing annual earnings by the annual number of hours worked. We reported median earnings and wages because survey earnings were capped by the US Census to protect identities (cap of \$150 000 from 1995-2002, \$200 000 from 2002-2009, and \$250 000 in 2010). Occupation was self-reported as physician or surgeon, dentist, pharmacist, nurse, physician assistant, or health care and insurance executive. Physician specialty was unavailable. We limited analysis to workers who were older than 35 years because the majority of physicians under this age are in training.<sup>6</sup>

Unadjusted median earnings were computed over multiple years to smooth data fluctuations (1987-1990, 1991-1995, 1996-2000, 2000-2005, and 2006-2010). We estimated a median regression model for each occupation that adjusted for age, sex, race, and state of residence.

We estimated percentage growth in earnings and wages between each period, and report growth rates from 1987-1990 to 1996-2000 and from 1996-2000 to 2006-2010. We tested the statistical significance of trends using 95% confidence intervals around the estimated growth rates. Dollar values were normalized to 2010 dollars according to the consumer price index. We used a significance threshold of .05 using a 2-sided test. Stata version 11.2 (StataCorp) was used for statistical analyses.

**Results.** Our sample included 30 556 respondents across all years who reported working as health professionals, including 6258 physicians (20.5%). Physician earnings fluctuated over the study period (TABLE).

During 1987-1990, median earnings for physicians were \$143 963 (interquartile range, 96 718-175 850) compared with \$157 751 (IQR, 101 279-203 281) during 2006-2010 (\$13 788 increase or growth of 9.6%;  $P < .001$ ). Other health professionals experienced larger growth in earnings from 1987-1990 to 2006-2010 (eg, pharmacists earnings increased by \$30 938 or 44.0%;  $P < .001$ ).

Regression-adjusted earnings growth from 1987-1990 to 1996-2000 for physicians was 19.9% (95% CI, 15.2% to 24.5%; FIGURE). Among other health professionals, earnings grew fastest for dentists (23.3%; 95% CI, 16.2% to 34.5%).

From 1996-2000 to 2006-2010, there was no significant growth in adjusted earnings for physicians (−1.6%; 95% CI, −5.4% to 2.2%). Adjusted earnings continued to grow for other health professionals from 1996-2000 to 2006-2010 (eg,

pharmacists, 34.4%; 95% CI, 28.4% to 40.3%). Similar patterns were noted for wages.

**Comment.** Despite attention paid to higher earnings of physicians in the United States compared with other countries, physician earnings grew less than those of other health professionals in the last 15 years. Possible explanations include managed care growth, Medicaid payment cuts, sluggish Medicare payment growth, or bargaining by insurance companies. Despite lack of recent

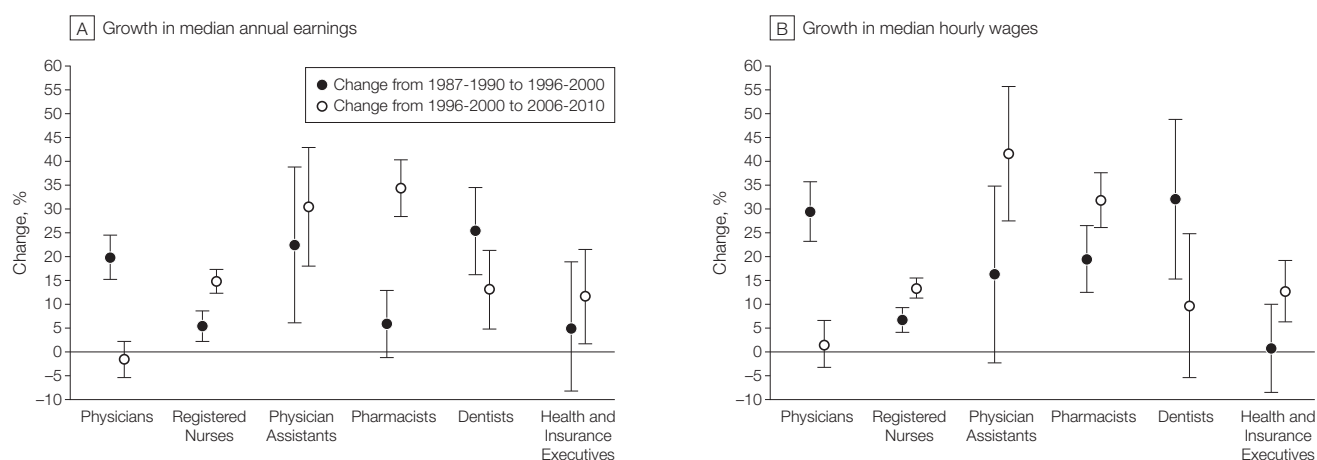
**Table.** Trends in Annual Earnings and Hourly Wages According to Occupation, 1987-2010

	Trends in Annual Earnings and Hourly Wages According to Occupation, Median (IQR), \$ <sup>a</sup>				
	1987-1990	1991-1995	1996-2000	2001-2005	2006-2010
<b>Total Annual Earnings</b>					
Physicians (n = 6258)	143 963 (96 718-175 850)	147 135 (96 060-155 420)	166 773 (100 333-196 329)	167 478 (100 487-223 304)	157 751 (101 279-203 281)
Nonphysicians					
Dentists (n = 1640)	105 511 (73 730-147 460)	120 075 (70 625-150 902)	132 029 (85 076-189 944)	123 126 (85 326-184 689)	129 795 (86 530-182 302)
Pharmacists (n = 1745)	70 341 (50 051-86 755)	72 685 (58 855-84 705)	76 616 (55 627-93 644)	89 321 (60 605-109 663)	101 279 (67 000-121 968)
Registered nurses (n = 17 774)	44 149 (28 793-58 574)	48 181 (31 478-61 871)	47 739 (33 444-62 825)	52 944 (36 938-69 089)	54 886 (38 000-71 880)
Physician assistants (n = 761)	42 229 (24 884-57 585)	37 201 (21 517-67 907)	45 484 (26 755-67 747)	49 127 (32 322-80 804)	64 818 (37 860-89 392)
Health care and insurance executives (n = 2378)	86 755 (64 514-133 470)	88 282 (61 797-128 773)	89 002 (63 315-127 709)	94 543 (67 719-145 289)	100 000 (63 100-144 461)
<b>Hourly Wage</b>					
Physicians	51.1 (38.1-64.2)	49.8 (36.3-61.6)	65.4 (38.8-73.1)	69.8 (42.9-80.5)	67.3 (43.3-80.1)
Nonphysicians					
Dentists	49.8 (35.4-67.6)	57.1 (34.8-74.7)	64.3 (42.8-88.2)	64.1 (42.4-95.1)	69.6 (44.8-97.5)
Pharmacists	31.0 (23.8-40.3)	33.9 (27.1-39.3)	37.8 (28.9-43.8)	44.0 (32.9-54.3)	50.6 (40.4-58.6)
Registered nurses	25.1 (19.3-30.5)	26.9 (21.2-33.3)	26.2 (20-32.7)	28.8 (22.2-36)	29.9 (22.8-38.5)
Physician assistants	15.7 (11.7-24.9)	20.3 (12.1-35.4)	21.0 (15.2-33.4)	28.9 (17.8-39.6)	31.2 (20.8-43.8)
Health care and insurance executives	38.3 (28.4-53.2)	38.2 (28.9-52.3)	39.6 (28.3-52.3)	41.7 (29-59.2)	42.5 (29.3-62.3)

Abbreviation: IQR, interquartile range.

<sup>a</sup>All dollar values are normalized to 2010 dollars using the consumer price index.

**Figure.** Adjusted Growth in Median Annual Earnings and Hourly Wages According to Occupation, 1987-2010



Estimates come from median regression of log earnings or hourly wages with other covariates including age, age squared, sex, race, state of residence, and year. Error bars indicate 95% confidence intervals.

growth, physician earnings remain higher than other occupations.

Study limitations included the use of self-reported data and no information on specialty or other earnings (eg, facility ownership). We also studied median earnings but trends could differ for high earners whose incomes we could not study because they were capped in the CPS.

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**Author Contributions:** Dr Seabury had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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*Acquisition of data:* Seabury, Chandra.

*Analysis and interpretation of data:* Seabury, Jena, Chandra.

*Drafting of the manuscript:* Seabury, Jena, Chandra.

*Critical revision of the manuscript for important intellectual content:* Seabury, Jena.

*Statistical analysis:* Seabury, Jena, Chandra.

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## CORRECTION

**Data Error in Figure:** In the Original Contribution entitled "Association of Weight Status With Mortality in Adults With Incident Diabetes," published in the August 8, 2012, issue of *JAMA* (2012;308[6]:581-590), Figure 2A contained an inaccurate number. The reported sample size of nonwhite participants who were normal weight should have been 107. The article has been corrected online.