Physicians who worked more hours reported higher rates of a recent work/home conflict (68.0%, 69.1%, and 82.1% for ≤49 hours, 50–59 hours, and ≥60 hours per week, respectively; overall, P < .01). Frequency of work/home conflicts in the last 3 weeks did not differ by sex (women, 79.0%, vs men, 76.7%; P = .62). Physicians with a work/home conflict in the prior 3 weeks were 50% (P < .001) and 30% (P = .02) more likely to report symptoms of emotional exhaustion or depersonalization at least weekly, respectively, than those who did not have a work/home conflict.

In multivariable analyses, each additional hour worked per week (odds ratio, 1.02 [95% confidence interval, 1.00-1.03] per hour worked), experience of a work/home conflict in the last 3 weeks (odds ratio, 2.09 [95% confidence interval, 1.10-3.97]), and resolving the most recent work/home conflict in favor of work (odds ratio, 1.88 [95% confidence interval, 1.13-3.12]) were independently associated with increased odds burnout. Sex, weeks of hospital service, weeks of consult service, in house overnight duty, and number of times called in to the hospital in the last year were not associated with burnout in these models.

Comment. This study of 465 academic general and subspecialty interns demonstrates that work hours, work/home conflicts, and how such conflicts are resolved are strongly related to physician burnout. These results validate findings from our previous comprehensive study of factors associated with burnout among 7905 US surgeons that relied on the full MBI and a comprehensive inventory of personal and professional characteristics. Although the groups in these 2 studies were disparate, the same 3 factors (hours worked per week, work/home conflict in the last 3 weeks, and resolving the last work/home conflict in favor of work) remained independent factors associated with burnout in multivariable models in both samples with strikingly similar odds ratios. These findings suggest that work/home conflict and how that conflict is managed may be central factors for physician burnout in a variety of practice settings.

Limitations of this study include its cross-sectional design and inclusion of a limited number of personal and professional variables. Because the study was conducted at a single academic institution where all physicians are salaried, its generalizability is unknown. However, the results are consistent with our prior large study of American surgeons. Additional strengths include a high response rate and involvement of both generalists and subspecialists.

Given the high prevalence of burnout among physicians and well-established negative personal and professional consequences, the observed associations of work hours and work/home conflicts with burnout suggest possible targets for action.

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Author Contributions: Dr Sloan had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design: Dyrbye, West, Sloan, and Shanafelt. Acquisition of data: Dyrbye, West, and Shanafelt. Analysis and interpretation of data: Dyrbye, West, Satele, Sloan, and Shanafelt. Drafting of the manuscript: Dyrbye, Satele, and Sloan. Critical revision of the manuscript for important intellectual content: Dyrbye, West, Satele, and Sloan. Statistical analysis: West, Satele, and Sloan. Obtained funding: Shanafelt. Administrative, technical, and material support: Dyrbye, West, and Shanafelt. Study supervision: Dyrbye and Shanafelt.

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Polycystic Ovary Syndrome in the United States: Clinical Visit Rates, Characteristics, and Associated Health Care Costs

In 1935, Stein and Leventhal described 7 women with amenorrhea, infertility, hirsutism, and enlarged, polycystic ovaries. Variations of this disorder, now referred to as polycystic ovary syndrome (PCOS), are now thought to be the most frequent cause of oligo-ovulatory infertility; however, there are no national data on PCOS. To address this deficit, the latest available data on PCOS-related visits to US medical facilities were compared with medical visits by similarly aged women seen for other problems (non–PCOS-related visits).

Methods. Data were obtained from the 2003-2008 National Hospital Medical Care and National Ambulatory...
### Table. Estimated Annual Medical Costs Associated With Polycystic Ovary Syndrome (PCOS) Medical Visits in the United States (2005-2008)\(^a\)

<table>
<thead>
<tr>
<th>Calculation</th>
<th>Cost, $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial evaluations</td>
<td>97 008 000</td>
</tr>
<tr>
<td>25%(^b) × 516 000 × $752(^c)</td>
<td></td>
</tr>
<tr>
<td>Ultrasoundographic evaluation</td>
<td>22 910 000</td>
</tr>
<tr>
<td>37%(^d) × 516 000 × $120</td>
<td></td>
</tr>
<tr>
<td>Health care provider costs</td>
<td>18 576 000</td>
</tr>
<tr>
<td>24%(^e) × 516 000 × $150</td>
<td></td>
</tr>
<tr>
<td>37%(^f) × 516 000 × $100</td>
<td>19 992 000</td>
</tr>
<tr>
<td>39%(^g) × 516 000 × $40</td>
<td>8 050 000</td>
</tr>
<tr>
<td>Medical costs associated with obesity(^h)</td>
<td>61 265 000</td>
</tr>
<tr>
<td>231 470 × $9.91 + 277 793 × $54.98 + 523 624 × $81.99 + 5822 × $131.54</td>
<td></td>
</tr>
<tr>
<td>Treatment for diabetes mellitus</td>
<td>715 795 000</td>
</tr>
<tr>
<td>17%(^i) × 516 000 × $8160(^j)</td>
<td></td>
</tr>
<tr>
<td>Metformin in nondiabetic patients</td>
<td>4 696 000</td>
</tr>
<tr>
<td>13%(^k) × 516 000 × $70(^k)</td>
<td></td>
</tr>
<tr>
<td>Oral contraceptives</td>
<td>122 808 000</td>
</tr>
<tr>
<td>34%(^l) × 516 000 × $700(^k)</td>
<td></td>
</tr>
<tr>
<td>Spironolactone</td>
<td>7 740 000</td>
</tr>
<tr>
<td>5%(^m) × 516 000 × $300(^k)</td>
<td></td>
</tr>
<tr>
<td>Eflornithine cream</td>
<td>11 765 000</td>
</tr>
<tr>
<td>4%(^n) × 516 000 × $570(^k)</td>
<td></td>
</tr>
<tr>
<td>Thiazolidinediones</td>
<td>20 434 000</td>
</tr>
<tr>
<td>3%(^o) × 516 000 × $1320(^k)</td>
<td></td>
</tr>
<tr>
<td>Infertility evaluation and treatment</td>
<td>52 745 000</td>
</tr>
<tr>
<td>19%(^p) × 516 000 × $538(^l)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1 162 884 000</td>
</tr>
</tbody>
</table>

\(^a\) Mean annual number of medical visits to US emergency departments, outpatient departments, and physicians’ offices that were associated with PCOS between 2005 and 2008, and were based on the National Hospital Medical Care and National Ambulatory Medical Care Surveys, and the calculated costs were rounded to the nearest thousand.

\(^b\) Proportion of PCOS medical visits that were for newly diagnosed disease.

\(^c\) The specific evaluations, therapies, and medications included in each category include a testosterone panel, thyrotropin, prolactin, basal 17-hydroxyprogesterone, sex hormone–binding globulin, insulin, C-peptide, lipid profile, oral glucose tolerance test, and blood draw fee in all new patients; dehydroepiandrosterone sulfate in 25% of new patients; endometrial biopsy in 30% of patients; and a corticotropin stimulation test in 6% of new patients. Costs are based on 2010 laboratory fees.

\(^d\) Costs for transvaginal sonograms were not included as part of this evaluation, since that cost is listed herein as a separate line item.

\(^e\) The proportions of PCOS medical visits in which a sonogram was obtained. Cost is based on 2010 Current Procedural Terminology (CPT) fee schedule.

\(^f\) The 2010 CPT fee for a new patient, 45- to 60-minute visit, with 24% of PCOS visits being by a patient new to the clinic.

\(^g\) The 2010 CPT fee for an established patient, 45- to 60-minute visit, for visits involving a sonogram.

\(^h\) The 2010 CPT fee for an established patient, 15- to 30-minute visit, for all remaining PCOS medical visits.

\(^i\) The proportions of PCOS medical visits listing this disorder or prescription.

\(^j\) The cost of a year of therapy for type 2 diabetes mellitus, as cited by Azziz et al\(^3\) and adjusted to 2010 dollars, using consumer price index (CPI) changes for medical care (http://www.bls.gov/cpi/). These costs were applied to the number of obese women in each age group.

\(^k\) The proportion of PCOS medical visits listing this disorder or prescription.

\(^l\) The specific evaluations, therapies, and medications included in each category include a testosterone panel, thyrotropin, prolactin, basal 17-hydroxyprogesterone, sex hormone–binding globulin, insulin, C-peptide, lipid profile, oral glucose tolerance test, and blood draw fee in all new patients; dehydroepiandrosterone sulfate in 25% of new patients; endometrial biopsy in 30% of patients; and a corticotropin stimulation test in 6% of new patients. Costs are based on 2010 laboratory fees.

\(^m\) The proportion of PCOS medical visits listing this disorder or prescription.

\(^n\) The specific evaluations, therapies, and medications included in each category include a testosterone panel, thyrotropin, prolactin, basal 17-hydroxyprogesterone, sex hormone–binding globulin, insulin, C-peptide, lipid profile, oral glucose tolerance test, and blood draw fee in all new patients; dehydroepiandrosterone sulfate in 25% of new patients; endometrial biopsy in 30% of patients; and a corticotropin stimulation test in 6% of new patients. Costs are based on 2010 laboratory fees.

\(^o\) The specific evaluations, therapies, and medications included in each category include a testosterone panel, thyrotropin, prolactin, basal 17-hydroxyprogesterone, sex hormone–binding globulin, insulin, C-peptide, lipid profile, oral glucose tolerance test, and blood draw fee in all new patients; dehydroepiandrosterone sulfate in 25% of new patients; endometrial biopsy in 30% of patients; and a corticotropin stimulation test in 6% of new patients. Costs are based on 2010 laboratory fees.

\(^p\) The specific evaluations, therapies, and medications included in each category include a testosterone panel, thyrotropin, prolactin, basal 17-hydroxyprogesterone, sex hormone–binding globulin, insulin, C-peptide, lipid profile, oral glucose tolerance test, and blood draw fee in all new patients; dehydroepiandrosterone sulfate in 25% of new patients; endometrial biopsy in 30% of patients; and a corticotropin stimulation test in 6% of new patients. Costs are based on 2010 laboratory fees.

\(^q\) The specific evaluations, therapies, and medications included in each category include a testosterone panel, thyrotropin, prolactin, basal 17-hydroxyprogesterone, sex hormone–binding globulin, insulin, C-peptide, lipid profile, oral glucose tolerance test, and blood draw fee in all new patients; dehydroepiandrosterone sulfate in 25% of new patients; endometrial biopsy in 30% of patients; and a corticotropin stimulation test in 6% of new patients. Costs are based on 2010 laboratory fees.

\(^r\) Approximate cost to purchase a year supply of the generic product at a US pharmacy in 2010. For eflornithine cream, the mean number of 30-g tubes used in a year was taken from Drug Ther Bull.

\(^s\) The mean cost of evaluating and treating infertility in 1 attempt to produce a viable offspring, as cited and described by Azziz et al\(^3\) and adjusted to 2010 dollars, using consumer price index (CPI) changes for medical care (http://www.bls.gov/cpi/). Azziz et al\(^3\) assumed that 50% of women with PCOS will seek infertility care within their reproductive lifespan. The calculations in the Table assume that the 17% of PCOS-related visits associated with infertility represent individuals who will receive infertility evaluation and treatment some time in a 25-year period, including the year in question ($13 450/25 = $538).

Medical Care Surveys (NHAMCS and NAMCS),\(^4-6\) which together provide a representative sample of all medical visits to nonfederal US emergency departments, outpatient departments, and physician offices. For each visit sampled, up to 3 physician-determined diagnoses can be recorded using International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) coding. Visits were considered PCOS related if any diagnoses was coded as ICD-9-CM 256.4, a defined medical code for PCOS (n=172 records). Three additional records, with ICD-9-CM codes consistent with PCOS were also included.

Between 2003 and 2008, all PCOS-related visits were by 11- to 60-year-old women, so for these analyses, PCOS-related visits were compared with non–PCOS-related visits by 10- to 60-year-old women (n=207 662 records).

For the comparison group, the estimated national numbers of medical visits for the entire period was 2 430 931 000.

In 2005, both surveys added dichotomous variables concerning the presence or absence of obesity and diabetes mellitus and began to record height, weight, and body mass index (BMI; calculated as weight in kilograms divided by height in meters squared). Weight was available for 79% of PCOS-related visits and 41% of non–PCOS-related visits; and BMI, for 63% of PCOS-related visits and 22% of non–PCOS-related visits. “Obesity” was defined as having a BMI of 30 or greater (http://www.nhlbisupport.com/bmi/), the obesity variable recorded in the affirmative, and/or a diagnostic field coded as 278.00 (“obesity”) or 278.01 (“morbid obesity”). Diabetes mellit-
tus was defined as an affirmative response to the diabetes variable, a code between 250 and 250.93 (“diabetes mellitus”) in a diagnostic field, and/or any of 3 NCHS-defined “reason for visit” variables coded as 2205.0 (“diabetes mellitus”).

All statistical analyses took into account the NHAMCS and NAMCS designs and sampling plans, by retaining all records and the weighting, strata, and primary sampling unit design variables, and used SAS/STAT version 9.2 survey module (SAS Institute Inc, Cary, North Carolina). These surveys’ sampling designs permit statistically reliable estimation when the estimate is based on at least 30 records and the associated relative standard error is 30% or lower. The diabetes data do not meet these criteria. Visit rates were calculated using US Census Bureau data.

Results. Between 2003 and 2008 there were 175 records associated with PCOS, representing 2 328 000 medical visits (eTable; http://www.archinternmed.com). Between 2005 and 2008, the mean yearly number of PCOS-related visits was 516 000 (95% confidence interval, 301 000-730 000) and the mean yearly rate of PCOS-related visits was 493 per 100 000 women aged 10 to-60 years (eTable). For 25% of PCOS-related visits, the symptoms began within 3 months of that visit.

Compared with 10- to 60-year-old women seen at non–PCOS-related visits, those at PCOS-related visits were significantly younger (mean age, 27 years vs 38 years). They also weighed more (mean weight, 87.45 kg vs 76.66 kg) and were more often obese (50% vs 18%; P <.001). A contraceptive prescription was provided at 34% of PCOS-related visits and metformin at 30%. Diet and nutrition counseling was provided at 40% of PCOS-related visits by obese women, compared with 24% of non–PCOS-related visits by obese women (P =.045).

The estimated annual national health care cost associated with PCOS was $1.16 billion, in 2010 dollars, with the greatest contributors being diabetes, obesity, contraceptives, initial evaluation, and infertility treatment (Table).

Comment. Interpreting these national data on PCOS-related visits requires several caveats: (1) They do not include cases of unrecognized disease. (2) Diagnostic accuracy cannot be confirmed. (3) Although the number of PCOS-related visits over this period is adequate for analysis, the sample size is small, and associated 95% confidence intervals are large. (4) These data represent clinical visits, not patients, and thus cannot be used to calculate PCOS incidence or prevalence.

To my knowledge, this study provides the first estimate of the annual rate of PCOS-related visits in the United States: 5 visits per 1000 women aged 10 to 60 years. A quarter of these visits were for recent-onset disease. As expected, most women seen for PCOS were of childbearing age. Half were obese; 40% of these women received some form of diet and nutrition counseling. Given the current economic environment, this study’s greatest contribution may be in providing a conservative estimate of the annual national cost of PCOS-associated medical care: $1.16 billion. Because diabetes and obesity contribute greatly to this cost, it would be useful for health care providers to intensify their nutritional, diet, weight loss, and exercise counseling and education efforts, examine the specific content of these activities, and compare the relative cost-effectiveness of various educational and counseling interventions for patients with PCOS.

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References


Health Care Reform

Annual Work Hours Across Physician Specialties

Debate surrounds the relative pay of physicians in various specialties. Several studies have addressed income differences. Few, by comparison, have addressed work hours, and we are not aware of any that consider annual work hours. Yet, work hours—indeendent of income—figure prominently in discussions of physician lifestyles, student choices, and patient safety.

Methods. Data were drawn from a nationally representative sample of physicians in the 2004-2005 Community Tracking Survey (CTS). Our subsample contained 6381 physicians self-reporting 20 to 100 weekly work hours and at least 26 weeks worked annually. Work hours included all medically related activities (direct patient care, administrative tasks, and professional duties). Annual work hours were calculated as (weekly work hours) x (weeks worked per year).

We analyzed 41 specialties with at least 20 respondents, as well as 4 broad-specialty categories: primary care, surgery, internal medicine, and pediatric subspecialties, and other specialties. Control variables were age, sex, race, whether board certified, whether graduated from foreign medical school, residence in areas with less than 200000 population, region of residence, practice ownership, academic employment, and revenue from managed care.