Assessing Evidence-Based Dermatology and Evidence-Based Internal Medicine Curricula in US Residency Training Programs

A National Survey

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Objectives: To examine attitudes toward evidence-based medicine and evidence-based dermatology and to assess evidence-based training in US internal medicine and dermatology residency programs.

Methods: A 1-page self-administered questionnaire was mailed to residency training directors and chief residents at 104 dermatology and 103 internal medicine residency programs from the same or affiliated medical centers.

Results: Questionnaires were returned by respondents from 70 (68%) of 103 internal medicine programs and 86 (83%) of 104 dermatology programs. Most respondents (91% internal medicine and 70% dermatology) strongly agreed or agreed that evidence-based internal medicine/dermatology is valuable and should be included in residency training (93% internal medicine and 70% dermatology). Respondents from internal medicine programs agreed more strongly with both statements than respondents from dermatology programs ($P<.001$). Dedicated evidence-based curricula were in place at significantly more internal medicine programs (50 [71%] of 70) than dermatology programs (20 [23%] of 86) ($P<.001$). Curricula at internal medicine programs offered significantly more evidence-based medicine training sessions (24 vs 6; $P<.001$) and biostatistics sessions (10 vs 2.3; $P=.03$), and internal medicine programs more frequently evaluated the curricula using clinical question applications (56% vs 30%; $P=.04$).

Conclusion: Despite favorable attitudes toward evidence-based dermatology, compared with internal medicine programs, dedicated evidence-based training is underdeveloped in dermatology programs.

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In medical practice, clinical decisions require the integration of clinical expertise, individual patient needs, and the best available information. The Accreditation Council for Graduate Medical Education and the Association of American Medical Colleges have recently called for the increased integration of epidemiology, biostatistics, critical appraisal, and medical informatics into the curriculum of both medical schools and graduate medical education programs to increase clinician information skills. Increased training in evidence-based medicine (EBM), defined as the conscientious, explicit, and judicious use of the current best evidence in making decisions about the care of individual patients, may begin to answer this call.

Despite its promise, EBM remains a contentious topic. Critics have argued that EBM does not reflect the art of medicine, inadequately addresses certain clinical concerns, requires too much time, or is inadequately evaluated. The attitudes toward EBM and prevalence of evidence-based training in dermatology has never been assessed or compared with those in other medical specialties. The purpose of this article is to assess these attitudes and the prevalence of dedicated evidence-based training curriculum in dermatology and internal medicine residency programs.

Methods

Programs

All 104 US dermatology residency training programs and 103 corresponding internal medicine programs at the same or affiliated institution were surveyed. One dermatology program (National Institutes of Health Clinical Center Program) was not paired with an internal medicine program.

Data Collection

A 1-page self-administered questionnaire asked respondents to rate their level of agreement on a Likert 5-point scale (1 = strongly agree to 5 = strongly disagree) with statements about the value of evidence-based training and the importance of incorporating evidence-based training into all dermatology and internal medicine

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Evidence-based dermatology survey. Asterisk denotes publication by Sackett et al.14

residency programs (Figure). Surveys sent to respondents at internal medicine programs were identical except that the words “evidence-based dermatology (EBD)” were replaced with “evidence-based medicine (EBM).” The survey contained additional questions assessing dedicated curriculum time for evidence-based training; EBM textbook use; the number of EBM sessions; the number of sessions focusing on epidemiology, biostatistics, or informatics; leaders of the training sessions, faculty attendance, outside training for session leaders, and evaluation of the EBM curriculum. The study was approved by the Colorado Multiple Institution Review Board, Denver.

The questionnaire was modified following pilot testing. Average completion time for the final survey was 6 minutes. The survey was mailed in October 2001 to all program directors. Program directors not responding to the initial mailing were sent questionnaires via regular mail or electronic mail in December 2001. The questionnaire was also mailed to the “chief resident” of all the programs in December 2001. Responses were received through February 2002.

Results represent the responses of all program directors returning surveys and the responses of chief residents when program directors failed to respond. A computer database was compiled and entered by 1 author (D.L.S.) and verified by 3 other authors (A.M.D, M.H.M., and R.P.D.).

DATA ANALYSIS

Means and frequencies were calculated on a univariate level to describe the data. For bivariate comparisons, contingency table analysis was performed assuming a type I error of α = .05. Comparisons of internal medicine and dermatology responses were performed using the Wilcoxon rank sum test for Likert scale variables, χ² test for categorical variables, and t test for continuous variables. Intrarater reliability tests comparing responses from the same residency programs were performed using a κ statistic. Analysis was performed using SPSS statistical software (SPSS Inc, Chicago, Ill; http://www.SPSS.com).

RESULTS

ATTITUDES REGARDING EVIDENCE-BASED CURRICULUM

Surveys were received from 86 dermatology (83%) and 70 internal medicine (68%) residency programs (Table). Responses from 75 dermatology residency directors, 11 dermatology chief residents, 56 internal medicine residency directors, and 14 internal medicine chief resi-
students comprised the analyzed pool. Despite favorable attitudes in both disciplines, attitudes were significantly more positive at internal medicine programs for the value of EBM (2.2 vs 1.5; P < .001) and toward the integration of EBM into training (2.1 vs 1.4; P < .001).

DEDICATED EVIDENCE-BASED CURRICULUM

Significantly more internal medicine programs (71% vs 23%; P < .001) reported having a dedicated evidence-based curriculum. Responses from both program directors and residents were obtained from 38 dermatology programs and 17 internal medicine programs. Overall agreement between director and resident responses on whether the program had a dedicated evidence-based curriculum (yes or no) was 84% for dermatology programs and 76% for internal medicine programs (dermatology, κ = 0.77; internal medicine, κ = 0.55).

Of the dermatology programs with dedicated EBM curricula, an average of 6 EBD sessions per year were held. Only 1 dermatology program reported using a specific textbook for the training. Evidence-based dermatology sessions were most frequently led by faculty (70%) and lasted approximately 1.3 hours. More than 2 annual EBD sessions focused on epidemiology, 3.6 on biostatistics, and 2.3 on informatics. Of session leaders, 40% received training in EBD.

Internal medicine programs held an average of 24 EBM sessions per year. Sessions averaged 1.5 hours long and were led primarily by faculty (52%). Of session leaders, 58% received training in EBM. Nearly 9 annual EBM sessions focused on epidemiology, 10.3 on biostatistics, and 9.2 on informatics. The most frequent teaching text used was *Evidence-Based Medicine: How to Practice and Teach EBM* followed by the *Users’ Guides to the Medical Literature* series published by *The Journal of the American Medical Association*.

Given that medical residents generate 2 clinical questions for every 3 patient encounters and more than 50% of these questions go unanswered, it is not surprising that evidence-based training is considered valuable by most respondents from the dermatology and internal medicine programs surveyed. Evidence-based training may provide a more efficient way to address patient-driven questions and better utilize adult learning principles: efficient adult learners (1) understand why they need to learn something, (2) take responsibility for their learning, (3) exploit experience as a resource, and (4) link learning with real-world requirements.

Compared with dermatology residency programs, internal medicine programs are more dedicated to formal evidence-based training: internal medicine programs had more favorable attitudes toward EBM, were more likely to have a dedicated EBM curriculum, and, compared with dermatology programs with EBD curricula, had more evidence-based training sessions. These findings are consistent with EBM originating in the field of internal medicine and may reflect increased familiarity with the paradigm of EBM in internal medicine. Still, despite the long history of EBM within the field of internal medicine, this survey reflects that only recently have most internal medicine programs within the United States adopted formal EBM training. The last national survey of internal medicine programs in 1998 found that 37% offered a freestanding EBM curriculum compared with 71% surveyed in the present study.

<table>
<thead>
<tr>
<th>EBD/EBM Survey Results</th>
<th>Dermatology</th>
<th>Internal Medicine</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Result</strong></td>
<td><strong>Dermatology</strong></td>
<td><strong>Internal Medicine</strong></td>
<td><strong>P Value</strong></td>
</tr>
<tr>
<td><strong>Response rate, No. of programs responding/No. contacted (%)</strong></td>
<td>86/104 (83)</td>
<td>70/103 (68)</td>
<td>.02</td>
</tr>
<tr>
<td><strong>Attitude scores, mean (95% CI)</strong>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EBD/EBM is valuable</td>
<td>2.2 (2.0-2.4)</td>
<td>1.5 (1.3-1.7)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>EBD/EBM should be a part of all training programs</td>
<td>2.2 (2.0-2.4)</td>
<td>1.4 (1.2-1.6)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td><strong>Practices, No. (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dedicated curriculum time for EBD/EBM</td>
<td>20 (23)</td>
<td>50 (71)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Using textbook for EBD/EBM</td>
<td>1 (5)</td>
<td>12 (24)</td>
<td>.07</td>
</tr>
<tr>
<td><strong>No. of sessions, mean (95% CI), range</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per year</td>
<td>6 (3.9-8.1), 1-50</td>
<td>24 (18.9-29.1), 3-365</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Per year on epidemiology</td>
<td>3.6 (2.2-5.0), 0-10</td>
<td>8.9 (5.8-12.0), 0-48</td>
<td>.08</td>
</tr>
<tr>
<td>Per year on biostatistics</td>
<td>2.3 (1.5-3.1), 0-6</td>
<td>10 (6.6-13.4), 0-48</td>
<td>.03</td>
</tr>
<tr>
<td>Per year on informatics</td>
<td>2.3 (0.4-4.1), 0-12</td>
<td>9.2 (5.2-12.2), 0-50</td>
<td>.13</td>
</tr>
<tr>
<td>Length of average session in hours, mean (95% CI), range</td>
<td>1.3 (1.0-1.6), 1-3</td>
<td>1.5 (1.2-1.8), 1-6</td>
<td>.45</td>
</tr>
<tr>
<td><strong>Leaders of EBD/EBM sessions, No. (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty</td>
<td>15 (75)</td>
<td>26 (52)</td>
<td></td>
</tr>
<tr>
<td>Residents</td>
<td>2 (10)</td>
<td>1 (2)</td>
<td></td>
</tr>
<tr>
<td>Both faculty and residents</td>
<td>2 (10)</td>
<td>17 (34)</td>
<td>.12</td>
</tr>
<tr>
<td>Other</td>
<td>1 (5)</td>
<td>6 (12)</td>
<td></td>
</tr>
<tr>
<td><strong>No. of faculty attending, mean (95% CI), range</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per year</td>
<td>2.0 (1.3-2.8), 0-8</td>
<td>3.0 (2.0-5.0), 0-20</td>
<td>.20</td>
</tr>
<tr>
<td><strong>EBD/EBM curriculum evaluation, No. (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acquisition of medical information (medical information searching)</td>
<td>6 (30)</td>
<td>27 (54)</td>
<td>.07</td>
</tr>
<tr>
<td>Appraisal of medical information</td>
<td>7 (35)</td>
<td>27 (54)</td>
<td>.15</td>
</tr>
<tr>
<td>Evaluation includes application to focused clinical question</td>
<td>6 (30)</td>
<td>28 (56)</td>
<td>.04</td>
</tr>
<tr>
<td>Evaluation includes application to individual patient decision making</td>
<td>7 (35)</td>
<td>27 (54)</td>
<td>.16</td>
</tr>
<tr>
<td><strong>EBD/EBM contact name provided, No. (%)</strong></td>
<td>16 (80)</td>
<td>46 (92)</td>
<td>.17</td>
</tr>
</tbody>
</table>

*Abbreviations: CI, confidence interval; EBD, evidence-based dermatology; EBM, evidence-based medicine.*

**Based on a 5-point Likert scale (1 = strongly agree to 5 = strongly disagree).**
CONCLUSIONS

Despite favorable attitudes toward EBD, dermatology programs offer dedicated evidence-based curricula much less frequently than internal medicine programs. Evidence-based medicine provides residents and clinicians the skills to address individual patient problems and to reach an answer based on clinical expertise and the best external clinical evidence. Perhaps more than any other field, the practice of medicine requires a lifetime dedication to self-directed learning. Physicians need to formulate concise clinical questions, efficiently access medical knowledge, and critically appraise advancements in diagnosis, prognosis, and treatment. To this end, all residency programs should consider increasing emphasis on formal evidence-based training.

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While evidence-based training has not been analyzed in dermatology, journal club training has. A survey of 89 dermatology programs in 2001 reported that most dermatology journal clubs have 1 to 3 faculty members in attendance, which correlates well with the average dermatology faculty attendance of 2 at EBD sessions reported in this study.

A 1-page survey format with most questions requiring yes/no or numeric answers helped this project obtain response rates relatively high for a physician survey. Moreover, comparison of responses from residents and faculty within the same program yielded strong agreement. The limited disagreement found might be explained by multiple factors, such as (1) change in curriculum during the survey period, (2) lack of knowledge about the full components of the residency programs curriculum, and/or (3) disagreement on what constitutes evidence-based curriculum.

Study limitations include the following: (1) not all US internal medicine programs were surveyed, and the surveyed subsets were not randomly selected from all programs; (2) the brevity and format of this survey may have constrained a fuller description of some respondents' attitudes and curricula; (3) the survey did not address the specific objectives of EBM curricula; and (4) since residency programs have traditionally incorporated evidence-based teaching into journal clubs, it is possible that journal clubs alone may account for programs reporting dedicated EBM curricula. The last limitation would lead to overestimation of EBM curricula because typically the objectives of journal clubs are aimed toward critical appraisal of medical literature, only 1 aspect of the 4-step EBM practice, which includes (1) asking a patient-driven structured question, (2) searching for relevant information, (3) critically appraising the information, and (4) applying this information to the patient.

References