STUDY

Allergic Contact Dermatitis and Patch-Testing Education in US Dermatology Residencies in 2010

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Background: **The state of allergic contact dermatitis (ACD) education has not been formally examined since the original study done by High and Cruz (*Am J Contact Dermat*. 2003;14(4):195–199).**

Objective: **The objectives of the study were to characterize the current state of ACD and patch-testing education in US dermatology residency programs and to determine if there has been any significant improvement over the past 8 years.**

Method: **This was a survey of ACD education and patch-testing practices in US dermatology residency programs.**

Results: **Surveys were sent to program directors and chief residents at all 112 US dermatology residency programs. Of the 224 surveys sent out, 105 (46.88%) were returned. There were several statistically significant changes from the 2002 survey. More faculty members who are designated as ACD experts are now members of the American Contact Dermatitis Society. Fewer programs now routinely review contact dermatitis–specific journals. Residents are now more likely to receive didactic lectures on ACD. Program directors estimated graduating residents will now be less likely to perform the TRUE Test in practice, and although not statistically significant, program directors also estimated an increase in the number of residents who will use expanded tests.**

Conclusions: **Although some areas of ACD education have improved over the past 8 years, opportunities to further improve remain.**

ALLERGIC CONTACT dermatitis (ACD) is a common problem encountered in dermatology clinics. Patch testing is the criterion standard for diagnosing ACD. A dermatologist performing patch testing must be familiar with the most common allergens that cause ACD, where they are encountered, and how to educate patients on avoidance. This knowledge should ideally be learned during residency. In addition, there are multiple ways to perform patch testing. Some dermatologists use the ready-to-apply TRUE Test, whereas others use more expanded panels. Interpreting the test requires skill. It is logical to assume that if residents are not trained to perform patch testing during residency, they most likely will not perform patch testing after graduation in their practices.

A study by High and Cruz[1] in 2002 characterized patch-testing education in US dermatology residency programs for the first time. Conducted 8 years after the original, our study is a follow-up survey whose aim was to further characterize the current state of ACD and patch-testing education in the United States as well as to compare answers of similar questions from 2010 to 2002 to determine if there has been any significant improvement.

METHODS

Investigational review board approval was granted from our institution. A survey was mailed to program directors and chief residents at all 112 US dermatology residencies accredited by the American College of Graduate Medical Education. Both the residency program director and chief resident at each program were asked to fill out and return the same survey (Table 1).

We first summarized all the responses from the 2010 survey. If the answers were categorical (ie, yes/no questions or questions that have a definitive answer), they were summarized using counts and percentages. If the answers were continuous (ie, questions that ask for a percentage), they were summarized using median and 25% and 75% quartiles (because variable distributions were fairly skewed). Continuous answers were also summarized with means and ranges. Categorical variables were tested using a χ^2 test or Fisher exact test. Continuous variable were tested using Wilcoxon rank sum test.

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TABLE 1. Survey

Are you a program director or chief resident?
_____Program director _____Chief resident
Does your institution have a faculty person designated as a contact dermatitis expert?
_____Yes _____No
If yes, is this faculty person a member of the American Contact Dermatitis Society?
_____Yes _____No
Does your institution have a designated patch-testing nurse?
_____Yes _____No
Who applies the patch tests at your institution?
_____RN/LPN/medical assistant _____Resident _____Faculty
How many hours per academic year do residents spend in didactic sessions dedicated to contact dermatitis?
_____Hours per academic year
Who presents these lectures?
_____Faculty person designated as the contact dermatitis expert
_____Faculty person NOT designated as the contact dermatitis expert
_____A resident
_____Other (please specify)
Do residents at your program routinely (at least 1×/month) review articles from a contact dermatitis–specific journal?
_____Yes _____No
Do residents at your program perform patch testing?
_____Yes _____No
If yes, which of the following do residents perform?
_____TRUE Test only
_____An expanded panel only
_____A combination of TRUE Test or expanded panel depending on the patient
On average, how many allergens do residents apply to a typical patch-testing patient?
_____Number of patches
Do residents at your program have a specific patch-testing rotation?
_____Yes _____No
Has a resident from your program presented at a contact dermatitis meeting within the last 3 years?
_____Yes _____No
What percentage of graduating residents from your program do you estimate will perform patch testing after graduation?
_____%
What percentage of those who will patch test do you estimate will use the TRUE Test vs an expanded test?
_____% will use TRUE Test
_____% will use an expanded test
Do *faculty* at your program regularly use the Contact Allergen Replacement Database (CARD) when patch testing?
_____Yes _____No
Do *residents* at your program regularly use the CARD when patch testing?
_____Yes _____No
Approximately how many patients are patch tested *throughout your institution* each month?
_____Number of patients patch tested each month
Approximately how many patients has a graduating resident patch tested *throughout his/her residency*?
_____Number of patients patch tested during an average residency
What other modalities are used, if any, to teach allergic contact dermatitis? Please list.
(1) _____
(2) _____
(3) _____

For questions that were asked in both 2002 and 2010, we compared the results to determine if improvement had been made over the past 8 years. The results between the 2 surveys were tested using a χ^2 test. $P < 0.05$ was considered statistically significant.

RESULTS

One hundred five (46.88%) of the 224 surveys were returned. Of the 105 surveys returned, 54 (51%) were from program directors, and 51 (49%) were from chief residents. There were no

statistically significant differences between answers given by program directors and chief residents as a group. We were unable to compare if the programs that responded to the 2010 survey were the same programs that responded to the 2002 survey. Surveys were received from both the program director and the chief resident at 34 of the 112 programs.

Contact Dermatitis Experts

Thirty-three (61.11%) of 54 program directors and 31 (60.78%) of 51 chief residents stated their program has a faculty member designated as a contact dermatitis expert. Compared with the responses in 2002, there was no statistically significant change in this response. Of those who answered yes, 30 (90.91%) of 33 program directors and 30 (96.77%) of 31 chief residents stated this faculty member is a member of the American Contact Dermatitis Society (ACDS). As compared with the 2002 survey, the chief resident response that the faculty member designated as an ACD expert is a member of the ACDS was a statistically significant increase from 60.98% in 2002 to 96.77% in 2010 ($P = 0.0004$). The program director response that the faculty member designated as an ACD expert is a member of the ACDS also increased from 73.91% in 2002 to 90.91% in 2010, but this was not a statistically significant increase ($P = 0.0575$).

ACD and Patch-Testing Education

Fifty-three (98.15%) of 54 program directors and 49 (96.08%) of 51 chief residents stated they have some form of didactic sessions dedicated to ACD. This was an increase from the 2002 response where 74 (91.36%) of 81 program directors and 57 (73.08%) of 78 chief residents stated their program has didactic sessions dedicated to ACD. The increase in chief resident response from 73.08% in 2002 to 96.08% in 2010 was statistically significant ($P = 0.0008$). The increase in program director response from 91.36% in 2002 to 98.15% in 2010 was not statistically significant ($P = 0.1440$).

The median number of didactic hours dedicated to ACD annually was reported by program directors as 4.50 hours with an interquartile range (IQR) (25th and 75th percentiles) of 4.00 for the 25th percentile quartile and 6.00 for the 75th percentile quartile. The median hours reported by chief residents was 4 hours with an IQR of 3 and 6. The time allotted to didactic sessions in 2010 was consistent with the time allotted in 2002 (average time allotted in 2002 was 4–5 hours annually).

A faculty member designated as an ACD expert presented at least some of the didactic lectures at 30 (55.56%) of 54 programs according to program directors and at 28 (54.90%) of 51 programs according to chief residents. A resident presented at least some of the didactic lectures at 24 (44.44%) of 54 programs according to program directors and at 33 (64.70%) of 51 programs according to chief residents.

Residents review articles from a contact dermatitis–specific journal routinely (defined in our study as at least 1 time per month) at 5 (9.26%) of 54 programs according to program directors and at 6 (11.76%) of 51 programs according to chief residents. In the 2002 study, 30.86% of program directors and 17.95% of chief residents reported routinely reviewing contact dermatitis–specific journals. The decrease from 30.86% in 2002 to 9.26% in 2010 reported by program directors was a statistically significant decrease. The decrease from 17.95% in 2002 to 11.76% in 2010 reported by chief residents was not statistically significant.

Twelve (22.22%) of 54 program directors and 14 (27.45%) of 51 chief residents reported having a specific patch-testing rotation. This was not a statistically significant change from responses in 2002.

Twelve (22.22%) of 54 program directors and 7 (14.00%) of 51 chief residents reported that a resident from their program has presented at a contact dermatitis meeting within the past 3 years. This question was not part of the 2002 survey. However, information obtained from the ACDS shows that, during the 2000, 2001, and 2002 annual ACDS meetings, there were a total of 40 oral presentations by residents. This number dropped to 35 total oral presentations by residents during the 2008, 2009, and 2010 meetings.

Other modalities commonly reported by both program directors and chief residents to teach ACD include textbook review, board review resources, national meetings, grand rounds, elective rotations, and individual patient cases.

Patch-Testing Practices

Twenty-eight (51.85%) of 54 program directors and 26 (50.98%) of 51 chief residents reported having a designated patch-testing nurse. Only nurses or medical assistants physically apply patches at 48 (88.89%) of 54 programs according to program directors and at 35 (70.00%) of 51 programs according to chief residents. Only 5 and 13 program directors and chief residents, respectively, reported that residents ever physically apply patches. Only 2 and 6 program directors and chief residents, respectively, reported that faculty members ever physically apply patches.

Residents use patch testing as a diagnostic tool at 46 (85.19%) of 54 programs as per program directors and at 42 (82.35%) of 51 programs as per chief residents. Compared with the responses in 2002, there was no statistically significant change in responses.

For those programs where residents do use patch testing as a diagnostic tool, program directors stated 10 (20.41%) of 49 use the TRUE Test only, 21 (42.86%) of 49 use an expanded panel only, and 18 (36.73%) of 49 use a combination of the TRUE Test or expanded panel, depending on the patient. For the same question, chief residents stated 16 (36.36%) of 44 use the TRUE Test only, 10 (22.73%) of 44 use an expanded panel only, and 18 (40.91%) of 44 use a combination. These responses were not statistically different from those in 2002.

Residents order an average of 57.56 patches to be placed (range, 20–111) per patient according to program directors and an average of 48.76 patches to be placed (range, 0–125) per patient according to chief residents.

Faculty members regularly use the Contact Allergen Replacement Database (which has since been replaced by the Contact Allergen Management Program [CAMP] and managed by the ACDS[2]) at 36 (72.00%) of 50 programs according to program directors and at 35 (71.43%) of 49 programs according to chief residents.

Residents were slightly less likely than faculty to regularly use the Contact Allergen Replacement Database. Regular use by residents was reported by 31 (60.78%) of 51 program directors and 30 (60.00%) of 50 chief residents.

A median of 10 patients with an IQR of 6 and 25 are patch tested throughout each institution per month according to program directors. Chief residents also reported a median of 10 patients with an IQR of 5 and 16 patch tested per month. The mean number of patients patch tested throughout an institution was reported as 17.8 per month (range, 1–150) by program directors and as 16.06 per month (range, 1–110) by chief residents. The 150 patients reported by a program director and 110 patients by a chief resident were outlier responses and were not responses from the same institution. The great majority of respondents reported 25 or less patients patch tested throughout an institution per month (8 different programs reported ≥50 patients patch tested throughout an institution per month).

A median of 13 patients with in IQR of 7.5 and 30 are patch tested by a graduating resident throughout his/her residency according to program directors. Chief residents reported 13.75 patients with an IQR of 10 and 30. The mean number of patients patch tested by a graduating resident was reported at 31.48 (range, 0–288) by program directors and as 26.33 (range, 1–200) by chief residents.

Prediction of Future Patch-Testing Practices

Program directors estimated a median 75% (IQR of 31.50 and 100) of graduating residents from their programs will perform patch testing after graduation. Chief residents estimated a median 50% (IQR of 30 and 95) of graduating residents will perform patch testing.

Program directors estimated of those who will patch test, a median of 80% (IQR of 50 and 100) will use the TRUE Test, and a median 20% (IQR of 0 and 50) will use an expanded test. Chief residents estimated that a median 75% (IQR of 50 and 100) will use the TRUE Test, and a median 25% (IQR of 0 and 50) will use an expanded test. When the data were summarized into answers that were able to be compared with the 2002 study (answer choices of 0%, 25%–50%, and 75%–100% of residents will perform the TRUE Test in practice), program directors estimated a statistically significant decrease in the number of residents who will use the TRUE Test in practice (5.26% in 2002 vs 12.77% in 2010 for the 0% answer, 18.42% in 2002 vs 31.91% in 2010 for the 25%–50% answer, and 76.32% in 2002 vs 55.32% in 2010 for the 75%–100% answer). Program directors also estimated an increase in the number of residents who will use expanded tests, but this increase was not statistically significant.

DISCUSSION

Over the past 8 years, there have been some encouraging improvements in ACD education among US dermatology programs. Notably, chief residents reported more ACD faculty experts are now members of the ACDS, and more programs are receiving didactic sessions dedicated to ACD education. The increase in the number of faculty experts who are members of the ACDS correlates with the increase in membership in the ACDS as a whole over the past 8 years—in 2002, there were 331 ACDS members. By 2010, membership more than doubled to 711. Also, program directors estimated that graduating residents were less likely to perform the TRUE Test in practice. And although not statistically significant, program directors did estimate an increase in the number of residents who will perform expanded testing after graduation.

However, there continues to be room for improvement. Unfortunately, program directors reported less routine participation in journal clubs that review contact dermatitis–specific journals. Although more faculty ACD experts are members of the ACDS, no increase in the percentage of programs that have an expert in ACD was seen. Although more chief residents report having didactics dedicated to ACD, the number of hours allotted to ACD education remains low and has not increased since 2002. Furthermore, only slightly more than half of programs report the didactics given are at least sometimes presented by the faculty member designated as the ACD expert. No increases in the number of patch testing–specific clinics occurred. Only 22% of programs per program directors and 14% of programs per chief residents have had a resident present at an ACD meeting in the past 3 years. Program directors reported 8 programs and chief residents reported 9 programs where no patch testing is done by residents at all. And program directors reported 10 programs and chief residents reported 16 programs where residents are exposed only to the TRUE Test. Program directors estimated 75% of graduating residents will perform patch testing, whereas chief residents estimated only 50% of graduating residents will perform the test.

The limitations of our study include incomplete sampling of all residency programs and recall bias. We were also unable to compare if the programs that responded to our survey were the same programs that responded in 2002.

In conclusion, although some aspects of ACD education have improved over the past 8 years, residency programs have room for improvement. Areas of suggested focus include recruiting and educating more experts in the field of ACD, reviewing more

contact dermatitis–specific journals, allotting more hours annually to didactic sessions, and having expert faculty members lead these didactic sessions. Faculty members should encourage residents to participate in ACD research and submit ACD case reports for publication. Furthermore, faculty members should encourage residents to utilize educational materials available on the ACDS Web site including self-assessment quizzes and a link to request to have a contact dermatitis lecturer at their program. Resident participation in the annual contact allergen bee at the ACDS annual meeting may also increase ACD interest and education. We hope these improvements will lead to more graduating residents ultimately performing patch testing in their own practices following residency graduation.

REFERENCES

1. High WA, Cruz PD Jr. Contact dermatitis education in dermatology residency programs: can (will) the American Contact Dermatitis Society be a force for improvement? *Am J Contact Dermat* 2003;14(4):195–199.
2. The American Contact Dermatitis Society's Contact Allergen Management Program (CAMP) Web site: http://www.contactderm.org/i4a/pages/index.cfm?pageid=3489.