

Student-Perceived Factors for an Enhanced Advanced Education Program in Prosthodontics Recall System

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Keywords

Advanced Education Program in Prosthodontics; focus group; students; recall; maintenance.

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This study was supported by a UIC-AstraTech Fellowship (FSA) and a Chicago Dental Society Fellowship through the University of Illinois at Chicago (KLK).

Accepted August 18, 2010

doi: 10.1111/j.1532-849X.2011.00718.x

Abstract

Purpose: A qualitative study of Advanced Education Programs in Prosthodontics (AEPPs) students was conducted to identify best practices to effectively promote ongoing health and student learning within the context of a patient-centered recall system.

Materials and Methods: Ten students from seven AEPPs nationwide were invited to participate in a focus group on recall systems within AEPPs. The discussion first identified whether an active recall program existed and then delved into benefits for patients and students, positive and negative features of existing recall systems, and factors that can be improved upon for an enhanced recall system.

Results: Participants advocated the highest standard of patient care, including regular ongoing care once restorative therapy is complete. Discussion indicates that not only does regular patient recall lead to health promotion, disease prevention, and monitoring of existing prostheses for the patient, but also provides for an enhanced learning experience for the students. Recognizing this, several students from AEPPs lacking an official recall system have established a "makeshift" system, encompassing a treatment completion letter, final intraoral photographs, patient education, and regular prosthetic evaluations, for their existing patients.

Conclusions: Prosthodontic program students perceived their program's recall effectiveness could be improved. Due to the numerous potential benefits of an active recall system for both patients and students, some perceived factors to be improved upon include treatment completion protocol, patient education, and establishment of a patient-centered recall system managed by a team of hygienists, receptionists, attending faculty, and residents.

Definitive rehabilitative treatment continues with the placement of patients on a regular recall schedule. Although insufficient evidence exists to support or refute the practice of encouraging patients to attend dental checkups at regular intervals,¹ a 6-month periodic examination has been advocated by practitioners in many countries.² Proponents report that regular dental recall is associated with improved oral health, less untreated disease, lower rates of tooth loss, higher number of sound teeth, and less incidence of acute symptoms requiring emergency care.^{3–5} Regular attendees suffer less from severity, prevalence, and social and psychological impacts of dental problems.⁶ Furthermore, a positive association has been found between regular dental attendance and the patient's perception of how oral health affects the quality of life.⁷ Among prosthodontic patients, regular monitoring of the existing prosthesis also helps minimize the need for future complex rehabilitation. These benefits are well recognized by program directors of Advanced Education Programs in Prosthodontics (AEPPs) as reported by a nationwide survey.⁸ Program directors in general perceived their program's recall effectiveness could be further improved, and this alone is a strong rationale to find means to enhance the ongoing maintenance programs in AEPPs nationwide.

Student training has focused on the learner as a passive recipient rather than an active participant in the training environment.⁹ More recently, a learner-centered approach to training has evolved, encouraging learners to become active participants in their own learning experience.¹⁰⁻¹² For this reason, many medical and dental schools are turning to the problem-based learning style to help encourage active learning¹³: "the principal objective of medical schools should be to encourage each student to assume responsibility for his or her own learning."¹⁴ Because dentistry is a constantly changing field, programs must provide students with the necessary framework to learn how to learn collaboratively as well as individually. As the ultimate purpose of AEPPs is to motivate students to become lifelong learners, a recall system provides the ideal arena for the final phase in the cycle of learning when taken in conjunction with the clinical and didactic experiences AEPPs offer.

Improved patient oral and general health through welldesigned learning opportunities is the primary reason to enable a systematic recall system. Since students have firsthand knowledge of their patients' needs and wants, an awareness of the student perspective on ongoing patient health and student learning would be significant toward developing an effective approach that universally meets the needs and expectations of those involved. Student perceptions on a variety of issues in prosthodontics and AEPPs have been previously sought.¹⁵⁻¹⁷ A focus group study was identified as the best route to obtain student perceptions on patient recall by facilitating an organized discussion with a group of individuals with a shared background. This study aimed to identify best practices to effectively promote ongoing patient health and student learning from the students' perspective.

Materials and methods

A focus group script was created and sent for approval by the University of Illinois at Chicago Office for the Protection of Research Subjects Institutional Review Board (IRB). After IRB approval (2009-0746) was obtained, program directors of several AEPPs were contacted via e-mail to encourage their third-year students to participate in a focus group during the 2009 American College of Prosthodontists Annual Session in San Diego, CA. A plated lunch was provided, and an Apple iPod touch (Apple Inc., Cupertino, CA) was raffled at the end of the session. AEPPs were defined as those programs officially recognized by the Commission of Dental Accreditation (CODA). Participants were divided into two equal groups with one facilitator per group. Students from the same program were assigned to different groups. The facilitators had similar backgrounds as the participants; one was a recent graduate of an AEPP and the other was in her final year. Facilitators followed a written script to help moderate the discussion (Appendix). This script was not followed verbatim, but merely used as a topic guide. Facilitators ensured the groups had a full discussion of each of the items on the agenda and that all respondents were given sufficient opportunity to air their views. Apart from this, the facilitators' role was passive. The discussion was audio recorded and subsequently transcribed. In addition, during the discussion, students were asked to complete an anonymous questionnaire identifying whether a recall system exists within their program and on the overall benefits of recall systems for patients, students, and the institution (Table 1). A 5-point scale (least to greatest) was used to determine the importance of each perceived benefit.

Raw data from the survey were entered into Microsoft Excel 2007 (Microsoft, Seattle, WA) for analysis. The frequency, mean, standard deviation, and statistical significance of the
 Table 1
 Survey of resident perceived benefits of recall systems and tabulated responses rating scale ranged from *least* (1) to *greatest* (5) benefit

Benefit	1	2	3	4	5	Means	SD
Patient							
Health promotion	0	0	0	4	6	4.6	0.52
Disease prevention	0	0	0	3	7	4.7	0.48
Regular oral cancer screening	0	0	1	3	6	4.5	0.71
Prevention of prosthesis complications	0	0	0	4	6	4.6	0.52
Education on oral health	0	0	4	1	5	4.1	0.99
Patient/doctor rapport	0	0	2	4	4	4.2	0.79
Resident							
Education on prosthesis maintenance	0	0	1	4	5	4.4	0.70
Education on liability/responsibility	0	0	2	3	5	4.3	0.82
Education on patient expectation	0	0	3	3	4	4.2	0.88
Institution							
Reduce liability	0	0	2	3	5	4.3	0.82
Increased financial productivity	0	1	3	2	4	3.9	1.1
Increased referral base	0	1	2	4	3	3.9	0.99
Research							
Data collection	0	0	1	4	5	4.4	0.70

Means and standard deviations (SD) are reported along with the tabulated responses.

rated factors for each category were calculated. Kruskal-Wallis Test was completed using SPSS version 17.0 for Windows (SPSS Inc., Chicago, IL).

Results

Ten students volunteered from seven prosthodontic programs. A cross-section of public (five) and private (two) programs participated. Programs from the East Coast, Central US, and West Coast were represented. Following the discussion outline, major points made by the residents were as follows.

Benefits of recall systems

1. Students agreed that recall is beneficial for patients, students, and the institution as a whole. One student was noncommittal. Several benefits mentioned during the discussion included prevention of future oral disease, oral cancer screening, and prosthesis maintenance for the patients. For the students, major benefits included treatment outcome assessment, data collection for future research endeavors, firsthand experience of private practice behavior, and the value of responsibility. The student in disagreement thought that a recall system was a "waste of time," since the students would have to see patients other than their own, yet at the same time he agreed "that there is a need for recall."

Existing recall systems

2. Three of the AEPPs reported having a recall system, and four reported lacking one. Those lacking recall had an emergency system in place to remedy any complications occurring during or after restorative therapy.

- 3. Program need for a recall system was reported to be dependent on the proportion of patients who are referred to the program for limited care and plan to continue care with their original general dentist versus those obtaining comprehensive care at the program.
- 4. Some students who reported not having an official recall system within their program have formulated a "makeshift" recall system for their own patients. This includes evaluating patients according to a regular, preset recall schedule, providing the patient with a written letter reporting therapy thus far rendered and materials/parts used, and providing the patient with the final master cast for implant-retained and -supported prostheses; however, once the student graduates, patients are either "lost in the system" or forced to seek continual care elsewhere as reported by the students.

Patient interaction with recall systems

- 5. Students agreed that "we (as prosthodontists) are holding ourselves to a higher standard," therefore, providing continual periodic care once restorative therapy comes to a completion should be routine practice. "We have an obligation to our patients to offer it (recall system)."
- 6. Most students believed that their patients will continue with periodic recall at the program even after their primary provider graduates, especially those who have had a good relationship with their provider.
- 7. Students recognized the importance of having educational pamphlets on maintenance available for patients.

Resident interaction with recall systems

- 8. Students from programs with recall systems reported having detected prosthesis complications that would have gone unnoticed without a periodic exam (i.e., fractured porcelain, ill-fitting removable prosthesis, wear) in those attending regular recall.
- 9. Students from programs with recall systems had the advantage of reevaluating the work they or their graduated peers completed. These students agreed that outcome assessment leads to better treatment planning and prognosis prediction and addresses patient expectations.
- 10. The majority of participants agreed that seeing recall patients as first-year residents is the best way to be introduced to the myriad of prostheses available to patients. They agreed that first-year students have more time available to see recall patients compared to their upper classmen.

Ideal recall system

11. Some factors that have facilitated a successful recall system include a treatment completion protocol, a treatment completion letter for the patient indicating the therapy rendered and the recall schedule, full-time receptionist and hygienist to follow up with patients and schedule appointments, reduced fees, and an electronic charting system allowing for scheduling of multiple appointments in advance by different providers and easy uploading of radiographs and intraoral photos. Most importantly, the ideal recall system would mimic that of a private practice. A final major factor difficult to control is patient motivation and student responsibility in developing active patient involvement in care; however, program directors and attending faculty can play a large role in establishing this practice in their students' skill sets by emphasizing the importance of post-therapy care.

Results from the questionnaire prioritizing benefits obtained from having a patient-centered recall system are presented in Table 1. The greatest benefits obtained by the patients as perceived by the students were disease prevention, health promotion, and prevention of prosthesis complication. The greatest perceived benefit for the students was education on prosthesis maintenance and that for the institution was data collection and reduction in liability. A recall system was perceived to provide the greatest benefit to the patients as opposed to the students and the institution. No statistical significance was found between each benefit within the categories of patient, resident, and institution.

Discussion

Students who participated in this study recognized the importance of recall within their program from perspectives of improved patient health and more robust learning experiences relating to continuing care and maintenance of patients who received complex prosthodontic therapy. In general, the resulting benefit was most consistently reported to be greatest for the patient, as the responses in Table 1 indicated consistently high responses for patient benefit with response standard deviations that were in general the lowest. Benefits for students, institution, and research initiatives were also considered positively from the student perspective, but variation in responses, as indicated by the broader standard deviations, indicated wider ranging opinions.

The authors recognize the limitations of this qualitative study. There are 46 AEPPs nationwide, and this focus group study interviewed students from only seven of those programs. Furthermore, the majority of programs were based in public institutions where resources may be limited. Although a questionnaire might have drawn a more diverse group of students, a large body of research indicates that survey studies as self-reports can be unreliable sources of data and context dependent.¹⁸ Furthermore, response rates tend to be low among students,¹⁵⁻¹⁷ and results can be biased since programs have an unequal number of residents within their programs. This is exemplified by an unpublished survey study of students on the topic of recall, which resulted in an unfavorable response rate of only 46% (FA Afshari, unpublished data, 2009). A focus group discussion has the advantage of exploring student insights and understanding in ways in which a simple, structured questionnaire may not be able to.¹⁹ By allowing interaction between participants, contrasting perspectives, emotions, and motives are recognized. One drawback of focus group studies is bias, since participation is voluntary and therefore, naturally inclined to attract the most proactive students; however, this can also be seen as a strength, since participants tend to be enthusiastic, genuine, and seriously consider the topics being discussed.

Even with these limitations, this study elucidated one important student position: "We are somewhat holding ourselves at a higher standard. Especially in these prosthodontic programs...it's a disservice to the patient to not take care of them." A majority of participants recognized that as prosthodontists we have the responsibility to provide the most optimal care for our patients. Considering the amount of time and money patients invest in their oral health, they should expect the highest standard of care, which includes continual care following restorative therapy. This concept especially becomes apparent when students from AEPPs lacking official recall systems report having implemented "makeshift" recall systems for their patients. Since students have firsthand knowledge of their patients' wants and needs, they have incorporated what they deem important practices in their routine for continual patient care. As part of their provisional recall system, these students established their own treatment completion protocol wherein they provide the patient with a letter describing the therapy completed, the materials used, and the importance of continual care. Final intraoral photographs are taken to serve as a baseline for easy evaluation by future residents treating the patient once the original provider graduates. Because locating master casts of past patients has been a challenge for AEPPs, some students provide the patient with their final master cast for implant-supported or -retained prosthesis lest an emergency arise. Finally, these patients are recalled by the student on a predetermined schedule for a prosthodontics evaluation.

AEPPs boasting a recall system provide a myriad of benefits for the patients, students, and institution, yet also have room for improvement as previously reported by program directors.⁸ The present study indicates that students agree with their program directors. Programs that heavily rely on the students to place the patients within the appropriate recall system for follow-up seem to fall short of their ultimate goal. With the students' busy schedule, regular recall is not a priority, and "a lot of patients get lost in the system." Some student-suggested means of solving this dilemma is for the faculty and director to emphasize the importance of recall to the students by inquiring not only into the treatment procedures, but also future follow-ups. Student repercussion for poor follow-up is also a suggested alternative; however, the ultimate solution is the establishment of an official recall team encompassing hygienists, receptionists, and defined days and dental chairs for recall.

Patients are not the only beneficiaries of a comprehensive recall system. For the students, the main advantage of having a recall system is having the opportunity to reevaluate the work they or their peers have completed: "I think part of our feeling is that we do not want to do recall because we might be afraid of what we might see. . . [recall] gives you a chance to look back on your work and learn from it." Since education in AEPPs aims to foster the student's ability to function independently in society, the ultimate objective should be that the student learns how to fully and independently regulate his or her own learning and becomes a lifelong learner. "Learning how to learn" emulates this concept of metacognition. Rather than obtaining guidance from an external source, the student must take responsibility for clinical decision making. This includes monitoring and judging one's own progress and making appropriate changes when necessary.20,21

Instead of internalizing external knowledge, lifelong learners need to form an active knowledge construct. This is where a comprehensive recall system comes into play. The didactic curriculums in AEPPs provide for the core concepts in prosthodontics for students to learn how to diagnose and treatment plan (Fig 1). Their clinical experience in providing patient care when taken in conjunction with this core knowledge is what ultimately makes them into clinicians. Yet to be an excellent clinician, one must have the capacity to adapt and learn from successes and failures. This can only be achieved if an opportunity exists to evaluate not only short-term but also long-term results of the treatments one has rendered. With a well-established patient recall system, the student is empowered with this unique ability to change along with science, technology, and societal expectations.

The concept of metacognition and its value to the students' learning experience can be exemplified in this story by one of the focus group participants:

"This is a kind of an embarrassing story. I did full-mouth prep-less veneers on a kid with tetracycline staining, and he was a bruxer. He was twenty. I mean, obvious signs of wear, horizontal wear. I didn't like the way they looked when I delivered them. . . In my opinion, I really didn't want to cut his teeth down 'cause he would have had to have full-coverage crowns, and I thought that was too aggressive. 'Cause he didn't have a cavity in his head, and I learned my lesson. Because every single recall visit he came in for, which he did come in for, he had fractured porcelain... And I ended up doing direct composites on several of them. But I used to dread seeing his name on my schedule. I always knew there was going to be something wrong. But I learned from that... The work that I did, yeah, maybe I'm not the proudest. It changed this guy's life in a positive way, but for me, it was not the standards that I wanted to present. But I learned my lesson, and now I know what that treatment will do and I constantly see it... ' cause he's coming in for cleanings, and if he does have a break in the porcelain, I can repair it. The reality is, it's a positive. No matter how I look at it, I see it."

The student recognized that by reevaluating this patient on a regular, ongoing basis, he had gained firsthand insight into prep-less veneers—their advantages, disadvantages, and maintenance outcomes. He was in the unique position of converting his core knowledge of this treatment modality obtained in his didactic courses to a more complete view that included patient outcomes. The exercise of "how could I have done that differently" is crucial to the learning process and can only occur with regular, ongoing patient care. The knowledge of a classmate or future peer evaluating one's work might further incline students to provide the highest standard of care, as opposed to care provided under some students' philosophy of "geographic success."

AEPP students perceived that a rigorous university-based recall system could have benefits that potentially far outweigh the time and money that may go into establishing and maintaining one. The student-proposed provisionals and suggestions highlight not only patient needs, but also students' needs. Based on the results of this focus group, the most ideal recall system



Figure 1 Schematic diagram of the steps in becoming a lifelong learner.

would reflect that of a private practice setting. Prior to placing the patient on recall, residents should be encouraged to follow an official recall protocol that encompasses educating the patient on the importance of regular maintenance, providing them with a treatment completion letter, and taking intraoral postoperative photographs to be uploaded to a centralized, computerized patient database. A receptionist could be in charge of making appointments on a regular basis using an electronic tracking and booking system. A staff of hygienist or hygiene students should see the patients for recall in predetermined dental chairs with students on call to perform the prosthodontic exam. More importantly, authoritative figures should emphasize the importance of regular maintenance to the students for not only patient well-being, but also student self-education. Students should also be encouraged to present short- and long-term follow-ups to their peers when reviewing cases during didactic courses.

Students make the decision to dedicate 3 years of hard work to becoming first-rate clinicians when they enter the field of prosthodontics. Similar to their patients' high expectation for dental care, these students expect the highest standard of education from AEPPs. Thorough didactic courses and comprehensive clinical experience are only two ingredients responsible for making a skilled clinician. Students must be provided with the opportunity to develop as lifelong learners, easily adaptable to change. To this end, the first step is forming lifelong relationships with one's patients and realizing what their needs and wants are. The second is to learn from one's own successes and failures and pursue different channels to make oneself better years after graduating from a prosthodontics program. A comprehensive, patient- and student-centered recall system incorporates both of these critical components necessary to make an exemplary prosthodontist.

Conclusions

A focus group study was performed to identify studentperceived best practices that would effectively promote ongoing patient health and student learning via a comprehensive recall system within AEPPs. Results of the discussion indicate that

- 1. An institutionally based recall system can provide a myriad of benefits for the patients, students, and institution.
- 2. Prosthodontic program students perceived their program's recall effectiveness could be improved.
- 3. Perceived factors to be improved upon include treatment completion protocol; patient education; and establishment of a patient-centered recall system managed by a team of hygienists, receptionists, attending faculty, and AEPP students.

Acknowledgments

The authors would like to acknowledge Dr. Rosemarie Tan for her exceptional work as a facilitator and Dr. Judy Chia-Chun Yuan for her assistance in recruiting participants and for statistical analysis. We also wish to thank the residents who generously devoted their time and effort to participate in this study.

References

- Beirne P, Forgie A, Clarkson JE, et al: Recall intervals for oral health in primary care patients. Cochrane Database Syst Rev 2005;18:CD004346: 1-38
- 2. Davenport C, Elley K, Salas C, et al: The clinical effectiveness and cost-effectiveness of routine dental checks: a systematic

review and economic evaluation. Health Technol Assess 2003;7:iii-v,1-127

- 3. Murray JJ: Attendance patterns and oral health. Brit Dent J 1996;181:339-342
- Sheiham A, Maizels J, Cushing A, et al: Dental attendance and dental status. Comm Dent Oral Epidemiol 1985;13:304-309
- 5. Todd JE, Lader D: Adult Dental Health in the United Kingdom 1988. London, Her Majesty's Stationary Office, 1991
- Richards W, Ameen J: The impact of attendance patterns on oral health in a general dental practice. Brit Dent J 2002;193:697-701
- McGrath C, Bedi R: Can dental attendance improve quality of life? Brit Dent J 2001;190:262-265
- Afshari FA, Koslow AH, Knoernschild KL, et al: Patient recall in Advanced Education in Prosthodontics Programs in the United States. J Prosthodont 2010;19:315-320
- Ford JK, Kraiger K: The application of cognitive constructs and principles to the instructional systems model of training: implications for needs assessment, design, and transfer. In Cooper CL, Robertson IT (eds): International Review of Industrial and Organizational Psychology, Vol 10. New York, Wiley, 1995, pp. 1-48
- Bruner JS: Toward a Theory of Instruction. Cambridge, MA, Harvard University Press, 1966
- Frese M, Altmann A: The treatment of errors in learning and training. In Bainbridge L, Quintanilla SAR (eds): Developing Skills with New Technology. Chichester, England, Wiley, 1989, pp. 65-86
- Salas E, Cannon-Bowers JA: The science of training: a decade of progress. Annu Rev Psychol 2001;52:471-499
- 13. Barrow HS, Tamblyn RM: Problem-Based Learning: An Approach to Medical Education, New York, Springer, 1980
- Tosteson DC: New pathways in medical education. N Engl J Med 1990;322:235-236
- Al-Sowygh ZH, Sukotjo C: Advanced education in prosthodontics: residents' perspectives on their current training and future goals. J Prosthodont 2010;19:150-156
- Blissett R, Lee MC, Jimenez M, et al: Differential factors that influence applicant selection of prosthodontic residency program. J Prosthodont 2009;18:283-288

- Yuan JC, Lee DJ, Knoernschild KL, et al: Residents' perception on implant surgical training in Advanced Education in Prosthodontic Programs. J Prosthodont 2010;19:557-564
- Sudman S, Bradburn NM, Schwarz N: Thinking about Answers: The Application of Cognitive Processes to Survey Methodology. San Francisco, Jossey-Bass, 1996
- Morgan DL: Focus Groups as Qualitative Research (ed 2). London, Sage, 1997
- Iran-Nejad A: Active and dynamic self-regulation of learning processes. Rev Educ Res 1990;60:573-602
- 21. Schwartz DL, Bransford JD: A time for telling. Cognit Instruct 1998;16:475-522

Appendix: Topic guide

Introduction

- Moderators introduce themselves to the group. Audio recorder. Interested in everyone's views and experiences.
- Benefits of Recall Systems How do patients benefit from recall systems? How do students benefit from recall systems? Complete questionnaire.
- (2) Existing Recall Systems Do you have a recall system within your program? Describe.
- (3) Patient Interaction with Recall Systems Are patients interested in continual care? Anything about program that promotes continual care? Hindrances patients face while obtaining continual care? Factors that can be improved upon? How?
- (4) Student Interaction with Recall Systems Education experiences obtained from seeing patients for recall?

Factors that can be improved upon? How?

(5) Ideal Recall System What are criteria necessary to establish an ideal recall system? Copyright of Journal of Prosthodontics is the property of Wiley-Blackwell and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.