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John Terry Berardino
University of South Florida

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DEDICATION

I would like to dedicate this to my wife Susan, who has patiently tolerated my absence and preoccupation throughout the pursuit of my degree; to my daughters, Allison and Sarah, who have helped me and humored me; and to all three of them for encouraging me each step along the way.

The Role of Audiology Technicians in the VA System

By

JOHN TERRY BERARDINO

A Professional Research Project submitted to the Faculty of the
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University of South Florida
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Doctor of Audiology

Harvey B. Abrams, Chair
Theresa Hnath-Chisolm
Arthur Guilford

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John T. Berardino

(ABSTRACT)

Eligibility reform in the VA and the resulting increased caseloads have brought about unacceptable wait times for new audiology appointments. Mandates to decrease wait times without increased resources have brought new demands on audiology clinics. One proposed solution is the addition of audiology technicians to VA audiology clinic practice.

The first purpose of this study was to survey the attitudes of VA audiologists and service chiefs regarding the use of technicians. The second purpose was to ask the survey respondents to assign as generally appropriate or inappropriate, job duties which might be accomplished by an audiology technician. Following a pre-survey to pilot the questionnaire, the final survey was e-mailed to all members of a national e-mail group. Ninety-three acceptable responses were analyzed. The survey responses indicate that a large majority of the respondents hold positive attitudes concerning the use of technicians, believe technicians can accomplish some duties now done by audiologists and believe technicians can help reduce current appointment backlogs. The respondents assigned a number of clerical, assistive, minor hearing aid repair and other duties as appropriate for technicians and many testing, evaluation, programming, and perceived professional duties as inappropriate for technicians. There were several items which were not clearly assigned as either appropriate or inappropriate technician duties. Open-ended responses indicated that strong feelings, both positive and negative, exist within the audiology and service chief community. The survey results will be used to develop an audiology technician job description and to identify specific training needs for establishing audiology technician positions throughout the VA healthcare system.

Introduction

Recent eligibility reforms within the Department of Veterans Affairs (VA) healthcare system have brought major change to caseloads in the system. Eligibility criteria for many VA health care services have been eased, resulting in many more veteran patients being eligible for many more VA services, including hearing aids. The resultant increase in caseloads has also increased wait time for new audiology appointments. While backlogs for new audiology appointments were, for decades, about two weeks on average, they reportedly now range from 90 to over 365 days nationwide. Indeed, in VISN 8 (which covers Florida, Georgia, and Puerto Rico and in which the investigator is employed) wait times are as long as 227 calendar days.

The VA Undersecretary of Health has mandated a reduction in these backlogs for new audiology appointments at the VA medical centers and outpatient clinics. This situation is complicated, however, by mandates to handle the increased caseloads and increased demands on the system without any major increase in resources (Kizer, 1995). While caseloads in VISN 8 have increased by as much as 50%, there have not been any substantial increase in staff or space.

We are in the process of pursuing many short-term actions to reduce backlogs resulting from these increased caseloads. These include: 1) outsourcing; 2) additional permanent or temporary staff; 3) time compressed schedules; 4) use of facilities earlier and later each day, as well as on weekends to maximize use of facilities and equipment. We have requested purchase of new equipment and additional space to facilitate productivity. All of these actions, as they are possible, will help reduce the short-term problem. A long term solution, however, may be the use of audiology technicians.

There is a tradition in VISN 8 for the use of audiology technicians in Audiology and Speech Pathology Services. There are several current technician positions filled in the central Florida area. There are 1.5 technicians at Bay Pines VA, one at Tampa VA, one at Orlando VA outpatient clinic and one at the recently opened Brevard County VA outpatient clinic. There is also recruitment ongoing for a technician at the New Port Richey VA outpatient clinic as well.

The establishment of audiology technicians should provide an effective and low cost permanent solution to audiology backlogs. Health technicians in audiology are currently paid from \$20,395 to \$33,065 and audiologists are paid from \$50,139 to \$65,179 in the VA system. The audiology technician will not replace audiologists as the primary care-provider in hearing health. The technician can assist, prepare patients, and accomplish clerical or administrative duties which currently keep the audiologist away from patient care. Some clinical activities can also be accomplished by the technician. These include hearing aid repairs or adjustment, ear impression, electrode placement, patient preparation for ENG and ABR, and identifying problems which will require the attention of the audiologist. Ideally, the audiologist and health technician will function as partners in hearing health care, providing complimentary services. The audiologist will supervise the health technician, and co-sign notes and has ultimate patient responsibility. This investigator's position is that this is an area with significant potential for the entire profession of audiology – not just VA audiology.

Consideration was originally given to the development of a curriculum for the didactic portion of the technician training, possibly at a local community college, as the basis

of the audiology technician education. Instead, this proposal has moved forward within the VA system through Dr. Harvey Abrams, Chief of the Audiology and Speech Pathology Service at the Bay Pines VA Medical Center, to the National Program Director of the Audiology and Speech Pathology Program in VA Headquarters, Dr. Lucille Beck. She has endorsed the concept of increasing the availability of education for audiology technicians within the VA system as well as the increased utilization of technicians throughout the VA system. She has moved the proposal forward on to include the Department of Defense (DOD). There are ongoing discussions between VA Headquarters staff and Department of Defense staff to create a sharing agreement between the VA and the DOD. This agreement would utilize the DOD staff, curriculum and training facilities, already widely used to train military technicians, for VA technicians as well. The facilities, staff, curriculum and concept are well established in the military structure. Some modifications for the unique needs of the VA may be required, these discussions are now taking place between VA Headquarters and DOD representatives.

Assuming that the audiology technician concept is supported and is likely to go forward, it is important to assess the climate in which the new audiology technician staff would operate. It has been stated that there are already established technician positions at a number of VA hospitals and clinics around the nation. For many VA audiologists the audiology technician will be a new concept and may be considered a potential threat. This fear has been expressed in the Audiology and Speech Pathology e-mail group, VHAWASASPS. In light of current backlogs and increased caseloads, however, the addition of audiology technicians may be welcomed. It was the purpose of this survey to determine the current attitudes of VA audiology staff and Audiology and Speech Pathology Service Chiefs toward the use of audiology technicians.

Methods

Respondents

Potential respondents were all members of a national VA audiology and speech pathology mail group (VHAWASASPS). The makeup of the group is changing and not well known. The mail-group was inspected visually by scrolling through the membership online and counting the audiologists and service chiefs by hand to estimate potential respondents. This inspection indicated that there were approximately 500 total members of the e-mail group, with about 280 being audiologists or service chiefs. It was estimated that the total number of possible respondents was approximately 280.

Survey

The survey (Appendix A) consisted of eight questions which established occupation, experience and attitude regarding audiology technicians, as well as 40 items which described activities which could be assigned as either audiologist or technician duties. Twenty of the items were more traditional technician/clerical duties and 20 were more traditional audiologist duties. Some could be assigned to either or both categories. The respondents were asked to assign the items as; 1. "Appropriate"; 2. "Somewhat Appropriate" ; 3. "Neutral" ; 4. "Somewhat Inappropriate" ; 5. "Very Inappropriate"; or 6. "No Opinion" as related to audiology technician duties. Prior to sending the survey to the field, a pre-survey (Appendix B) was completed by 10 audiologists to confirm that the duties assigned by the author as accepted traditional audiology or audiology technician duties were similarly assigned by other practicing clinicians. Also, there was an "open-commentary" section for comments

regarding the respondents' opinions or attitudes regarding audiology technicians.
Procedures

Following minor modifications based on pre-survey results, the final survey was e-mailed to all members of the national mail-group (VHAWASASPS). The respondents were asked to reply within five workdays. All survey responses sent electronically by the end of the fifth workday were accepted for analysis. There were four surveys returned as undeliverable. There were 97 surveys returned by the respondents. Of these 97, four were either partially completed, or were corrupted en route. These four were excluded. A total of 93 surveys were considered good responses and were analyzed.

Results and Discussion

The initial set of questions were designed to define the survey respondents. Of the respondents, 70 (75%) were from audiologists, 21 (23%) were from service chiefs, and 2 (2%) were identified as "other" and were noted as assistant service chiefs. The assistant service chiefs were included in the audiologist group, totaling 72 audiologists (77%) and 21 service chiefs (23%).

There was a second part to question one of the survey, which asked for the respondent's degree. The majority of respondents (57%) did not answer the question. Of the 43% who answered the question there were 15 doctorate level responses (16%) and 25 masters level responses (27%). These results were likely affected by the placement of the item as part of the first question as the item was apparently missed by most respondents.

Questions two, three, and four asked respondents about their current or previous experience working with audiology technicians. In examining responses to all three questions, it was found that 51 (55%) of the respondents did not currently nor had ever worked with an audiology technician. Forty-two (45%) either currently work with an audiology technician or had at some time in the past.

One of the goals of the current study was to evaluate whether there would be differences between respondents who worked with audiology technicians and those who did not. Table 1 summarizes the differences in attitudes between those audiologists who had experience working with technicians and those who did not. In general, clinicians with experience working with technicians had more positive attitudes and expectations than those who had no experience.

The greatest difference between the groups was the perceived threat to the profession of audiology. A small percentage (25%) of respondents with experience with technicians perceived technicians as a threat compared to 47% of clinicians with no technician experience.

In addition to assessing the attitudes of audiologists and service chiefs, the purpose of the survey was to use the respondents' opinions to construct a theoretical list of acceptable technician job duties. There were 40 items presented to the survey participants.

The clinicians' responses to the list of possible technician job duties can be divided into three groups. The first group consisted of items for which the majority of responses were judged as being *very appropriate* or *somewhat appropriate* as technician duties. The second group included the *somewhat inappropriate* and *very inappropriate* responses. The third group included duties where the responses were inconclusive in terms of

respondent judgements.

Table 1

A Comparison of Attitudes Between Clinicians With Experience With Technicians and Those Without Experience

Question	Respondents with past experience with technicians	Respondents with no experienced with Technicians
#5. Is your opinion of working with an audiology technician overall negative or positive	Positive (94%)	Positive (76%)
#6. Do you feel that an audiology technician could help reduce duties now performed by audiologists which could be performed as easily by technician educated staff?	Yes (94%)	Yes (79%)
#7. Do you feel that working with the assistance of audiology technicians could pose a threat to audiology as a profession?	Yes (25%)	Yes (47%)
#8. Do you feel that in your practice situation, the addition of an audiology technician would help reduce your current level of new appointment backlogs?	Yes (69%)	Yes (63%)

Those duty items that were judged to be *very appropriate* or *somewhat appropriate* for the audiology technicians as judged by at least 51% of the respondents are listed in Table 2. Those duty items that were judged to be *somewhat inappropriate* or *very inappropriate* by at least 51% of the respondents, are listed in table 3. Finally, those items for which there was no majority of respondents judging the duties as either *appropriate* or *inappropriate*, are listed in table 4.

Table 2

Duties Judged to be *Very Appropriate* or *Somewhat Appropriate* by a Majority of Respondents

Item #	Description	% of Respondents Rating Item <i>Appropriate</i>	% of Respondents Rating Items <i>Inappropriate</i>
1	Shipping and Mailing	90%	3%
2	Data Entry / QUASAR	83%	6%
3	Checking in hearing aids from manufacturer	85%	5%
9	Prepare patient for ABR	54%	
10	Prepare patient for ENG	51%	22%
15	Order and stock supplies	87%	5%
16	Patient follow-up or reminder calls	84%	6%
17	Minor hearing aid repair, such as battery doors	84%	6%
18	Screening interviews	54%	23%
20	Equipment calibration scheduling	78%	6%
21	Equipment minor maintenance	57%	19%
22	Hearing aid cleaning, wax, etc	84%	8% 11%
24	Earmold tubing replacement	80%	
25	Hearing aid outcome and data collection	52%	28%
30	Daily Biological Calibration	54%	25%

Table 3

Duties Judged to be *Somewhat Inappropriate* and *Very Inappropriate* by a Majority of Respondents

Item #	Description	% of respondents rating items as <i>inappropriate</i>	% of respondents rating items as <i>appropriate</i>
7	Adjusting programmable hearing aids	66%	16%
8	Adjusting non-programmable hearing aids	59%	22%
11	HAO, programmable	56%	24%
12	HAO, non programmable	57%	24%
13	Real ear measures	76%	9%
19	Patient case history	62%	17%
23	Cerumen management	62%	16%
26	Pure tone air	78%	9%
27	Pure tone bone	85%	3%
28	Immittance	85%	3%
29	SRT	88%	1%
31	Stenger Tests	86%	1%
33	MCL VCL	84%	2%
34	Loudness mapping	85%	2%
35	Screening ABR	76%	8%
37	Patient counseling (independent)	65%	13%

Table 4

Duties Not Judged as *Appropriate* Nor *Inappropriate* by a Majority of Respondents

Item #	Description	Appropriate	Inappropriate
4	Otoscopy	42%	45%
5	Hearing screening (fixed level)	41%	40%
14	Pre and Post Fit assessment (HHIE, COSI, etc)	47%	38%
32	Program notes with co-signature	49%	39%
36	Assist audiologist with administration of balance battery	43%	21%
38	Assist audiologist with HAO programmable	42%	29%
39	Assist audiologist with cerumen management	49%	28%
40	Assist audiologist with HAO non-programmable	48%	27%
6	Earmold impression	49%	38%

There were opportunities within this survey for open-ended responses. Eighty-seven of the 93 respondents (96%) took the opportunity to respond in this way. The responses varied from a few words to narratives that exceeded a full page. Examples of the open-ended responses are presented in Tables 5, 6, and 7.

In general, the comments written by the respondents were reflective of the strong feelings which exist in the profession concerning the subject of audiology technicians. The positive comments concerning improved efficiency, for example, were counterbalanced by concerns regarding potential threats to the audiology profession.

The open comments mostly addressed hearing aids, including hearing aid checks, minor and other hearing aid repairs, hearing aid problem triage, phone triage and shipping and mailing of hearing aids. The next most common area mentioned was general clerical and data entry including workload and hearing aid data entry, file maintenance and other associated duties. The remaining comments addressed duties such as housekeeping, stocking of supplies, equipment maintenance, cerumen management, test preparation, hearing aid programming, patient satisfaction surveys and otoscopy.

Table 5.

Examples of Positive Comments for the Open Ended Response

- Technicians would enhance audiologist job satisfaction
 - Technicians would compliment the profession of audiology
 - Technicians could make audiologists more efficient
 - There are other professions which have two or three tiered professions
 - Well trained assistants would be very helpful in the VA system
 - Where can I get one?
 - Wish we had more technicians
 - One respondent indicated that she responded to the survey not having experience with a technician but that they were about to hire a technician. Her intention is to complete the survey again after a year to see whether her opinions have changed.
-

Table 6

Examples of “Cautionary” Comments for the Open Ended Response

- Duties must be uniform within the VA
 - Duties must be clearly defined
 - Technicians must be appropriately, strictly supervised
 - Technicians should do hearing aid work only, no testing or interpretation
 - Technicians should be credentialed or certified, with strict guidelines
 - There may be ethical or JCAHO concerns
 - Technicians must be properly educated
 - There should be a training program for technicians
 - Technicians should not do testing, clinical work, test interpretation, cochlear implants, cerumen management, real ear, hearing aid evaluation or any audiologist professional duties.
-

Table 7

Examples of Negative Comments on the Open Ended Response

- Technicians will reduce the quality of care.
 - The general public is not clear on what audiology is
 - Cost cutting makes technicians risky. Why hire audiologists when technicians are cheaper?
 - Human resources could replace audiologists with technicians, see them as the same
 - Who knows what may happen with managed care
 - We need to protect the procedures within the profession of audiology
 - We are already viewed by some as technicians
 - Audiologists are liable for the activities of the technician
 - We're shooting ourselves in the foot by hiring technicians
 - We sacrifice professionalism when we hire and train someone to do our jobs without a degree
 - Using a technician keeps the audiologist from knowing what problems occur
 - We shouldn't be apathetic and let technicians handle professional duties
 - Hiring technicians will reduce the number of audiologists and reduce the quality of care
 - Don't give away cherished duties. Taking away duties is a threat to audiology
 - Administrators will want to use technicians in inappropriate ways.
 - Technicians are inappropriate for audiology, are bad for patient care and for the profession
 - Audiologists who use technicians are probably giving shoddy care
-

Summary and Conclusions

The objectives of this study were to survey the attitudes of VA audiologists and service chiefs regarding the use of audiology technicians and to use the survey responses to construct a theoretical list of audiology technician job duties acceptable to practicing VA audiologists and service chiefs.

The results of the investigation suggest that the vast majority of the respondents, both audiologists and service chiefs, have a positive opinion about the use of audiology technicians. There was a difference in attitudes regarding audiology technicians among those who have worked with audiology technicians compared to those who have not. Clearly, the response patterns and the open-ended comments confirm that there are strong feelings on both sides of the issue. Most respondents did not feel that technicians were a threat to the profession, felt that the addition of an audiology technician would help reduce new appointment backlogs and felt that there are duties now performed by audiologists which could easily be performed by audiology technicians. The results seem to indicate that the time may be right to proceed with investigation and proposals for future use and training of audiology technicians.

While only a minority of VA audiologists currently practice with audiology technicians, there appears to be a growing interest in utilizing technical support personnel. The open-ended responses to this survey, the high return rate and the personal contacts made to the author about the use of technicians seem to support this observation. The generally

positive attitudes towards technicians revealed through this survey as well as the array of duties judged as appropriately performed by technicians are further evidence of the apparent positive future of audiology technicians in the VA.

It is recognized that the results reported here may be specific to the VA system and its version of audiology practice. Executive orders, congressional mandates, budgetary limitations, government and non-governmental agency oversight and the sheer number of patients served (up to 1700 patients per month at some clinics) create pressures unique to the VA environment. It is likely that the attitudes and judgements regarding appropriate technician duties may be quite different in other audiology practice environments. To the extent that the results of this survey have implications for VA audiology, however, those duties identified as *appropriate* can serve as the basis for a prototype job description for the VA audiology technician. In addition to the *appropriate* duties, those without clear preferences as well as selected *inappropriate* duties (e.g. ear impressions) should also be considered for the inclusion in the prototype position description. Questionable duties might be added with some accommodation for special training and certification. That is, perhaps those duty items without a clear majority of respondents judging them to be *appropriate* should be considered optional pending satisfactory completion of a training and/or certification program.

As suggested by the respondents, It is important to have uniformity of training, a standard set of acceptable duties and a standard level of supervision from the audiologist in the practice. It is also important for the technician to have an identity which is separate and distinct from the audiologist and recognizable by other professionals, managers and human resources specialists.

As noted previously, the application of these survey results outside of the VA may be limited. It is important to recognize, however, that professional (e.g., the Au.D.) and demographic trends (e.g., an aging population) will likely require audiologists to increasingly depend on technical support personnel to meet growing demands for audiologic services. It is suggested that a similar study be conducted to assess the attitudes of audiologists in the non-VA sector. In addition, it may be of value to assess the attitudes of clinical managers and human resources professionals as those emerged as an identified area of concern among some audiologists who completed the survey. Furthermore, an investigation of the history and success of other professions which have a multi-tiered professional structure (e.g., optometry, pharmacy) seems warranted.

It appears that there is considerable interest among VA audiologists for utilizing technical support personnel. Cautious progress is recommended toward the establishment of a prototype position description, a VA-wide training program, and standards of practice concerning the audiology technician. If these are accomplished, success of this cooperative professional endeavor seems assured.

References

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Appendix A. Audiology Technician Survey

The following survey is designed to determine the opinions held by **audiologists** and **ASP service chiefs** regarding the issue of audiology technicians. This current survey is designed to address only the audiology issues at this time, not speech pathology. Please answer the questions as they reflect your personal opinions and experience.

Since the issue of audiology technicians is taking on new importance in the current atmosphere of eligibility reform and backlog reductions, your opinion is important and can make a difference in future VA plans and activities. Please take the time to express your opinions about this issue. **A response within 5 workdays would be greatly appreciated.**

Instructions for responding

1. click on the “reply” button
2. scroll down to the survey
3. fill in answers and mark the duty items
4. once completed, click on the “send” button
5. if unable to respond via e-mail or if you prefer to FAX, print, complete, and FAX to (813) 978-5812 Attn: John Berardino

1. Your profession is: Audiologist___ Service Chief___ Other_____
your degree___ (please specify)

1. Do you currently work with an audiology technician? Yes___ No___

2. If you do not currently work with a technician, have you ever worked with an audiology technician? Yes___ No___

3. If former military, have you worked with an “ENT technician?” Yes___ No___
Not former military _____

4. Is your opinion of the possibility of working with an audiology technician overall Negative___ or Positive___?

5. Do you believe that an audiology technician could help reduce duties now performed by audiologists which could be performed as easily by technically educated staff? Yes___ No___ . If yes, please give examples.

Do you feel that working with the assistance of audiology technicians could pose a
6. potential threat to audiology as a profession? Yes___ No___ . Please explain.

7. Do you feel that in your practice situation, the addition of an audiology technician would help reduce your current level of new appointment backlogs? Yes___ No___ .

Appendix A. (Continued)

Please review the following potential work activities. Indicate how you feel about the APPROPRIATENESS OF A TECHNICIAN PERFORMING EACH TASK by marking (for e-mail return) or circling a number next to the activity (for mail or FAX return.)

The numbers from one to six indicate:

One= very appropriate

8. Two= somewhat appropriate

Three=neutral

Four=somewhat inappropriate

Five= very inappropriate

Six= no opinion

<u>Activities</u>	<u>Rating</u>					
1. Shipping and mailing activites.....	1	2	3	4	5	6
2. Data entry (such as QUASAR or encounter forms).....	1	2	3	4	5	6
3. Checking hearing aids in from manufacturer.....	1	2	3	4	5	6
4. Otoscopy.....	1	2	3	4	5	6
5. Hearing screening (fixed level, pass-fail).....	1	2	3	4	5	6
6. Earmold impressions.....	1	2	3	4	5	6
7. Adjusting programmable hearing aids.....	1	2	3	4	5	6
8. Adjusting non-programmable hearing aids.....	1	2	3	4	5	6
9. Preparing patient for ABR (instructions, electrode prep.etc)...	1	2	3	4	5	6
10. Preparing patient for ENG (instructions, electrode prep.etc)..	1	2	3	4	5	6
11. Hearing aid orientation (HAO),(programmable).....	1	2	3	4	5	6
12. Hearing aid orientation (HAO),(non-programmable).....	1	2	3	4	5	6
13. Real ear Measures.....	1	2	3	4	5	6
14. Pre & post fitting assessments (HHIE/A, COSI, etc).....	1	2	3	4	5	6
15. Ordering & stocking supplies, batteries.....	1	2	3	4	5	6
16. Patient follow-up or reminder calls.....	1	2	3	4	5	6
17. Minor hearing aid repairs (batteries, battery door etc.).....	1	2	3	4	5	6
18. Screening interview (not case history).....	1	2	3	4	5	6
19. Patient case history.....	1	2	3	4	5	6
20. Equipment calibration scheduling.....	1	2	3	4	5	6
21. Equipment minor maintenance.....	1	2	3	4	5	6
22. Hearing aid cleaning (wax removal, etc.).....	1	2	3	4	5	6
23. Cerumen management.....	1	2	3	4	5	6
24. Earmold tubing replacement, cleaning l.....	1	2	3	4	5	6
25. Hearing aid outcome data collection, analysis.....	1	2	3	4	5	6
26. Pure tone audiometry.....	1	2	3	4	5	6

Appendix A. (Continued)

One= very appropriate
Two= somewhat appropriate
Three=neutral
Four=somewhat inappropriate
Five= very inappropriate
Six= no opinion

Activities	Rating					
27. Bone conduction audiometry.....	1	2	3	4	5	6
28. Immittance audiometry.....	1	2	3	4	5	6
29. Speech reception threshold.....	1	2	3	4	5	6
30. Daily biological calibration.....	1	2	3	4	5	6
31. Stenger tests (pure tone, speech).....	1	2	3	4	5	6
32. Write progress notes (with cosignature).....	1	2	3	4	5	6
33. MCL,UCL measures.....	1	2	3	4	5	6
34. Loudness mapping tests.....	1	2	3	4	5	6
35. Screening ABR (without interpretation).....	1	2	3	4	5	6
36. Assist audiologist with admin. of balance test battery....	1	2	3	4	5	6
37. Patient counseling (independent).....	1	2	3	4	5	6
38. Assist audiologist with HAO (programmable).....	1	2	3	4	5	6
39. Assist audiologist with cerumen management.....	1	2	3	4	5	6
40. Assist audiologist with HAO (non-programmable).....	1	2	3	4	5	6

8. Open commentary

Please include here any comments you wish to add relative to the audiology health technician issue.

Address: John T. Berardino, M.S., MPH, CCC-A
 Chief, Audiology & Speech Pathology Service (126)
 James A. Haley Veterans Hospital
 13000 Bruce B. Downs Blvd.
 Tampa, FL. 33612
 Phone: (813) 972-7529
 FAX: (813) 978-5812

Appendix B. Pre-survey Analysis

The audiology technician pre-survey was delivered to 12 audiologists to complete. The document was either delivered in person or placed in a workplace mailbox. Five were delivered to VA audiologists, six were delivered to university audiologists and one to an audiologist in a group practice. Ten of 12 were returned by the five-day deadline placed by the investigator. Five copies of the pre-survey were e-mailed to audiologists in a variety of settings. Within the five-day deadline, none of the e-mailed pre-surveys were received. It is postulated that given the short response time and that each e-mailed survey was sent to home e-mail accounts, the zero return rate resulted from infrequently read home e-mail accounts. Note that the actual survey was sent to professional e-mail accounts only, which were assumed to be used more frequently by most VA audiologists.

The 10 returned surveys were evaluated and the following was found: for the 20 assigned by the author as *audiologist* duties. Of these 20 items, the pre-survey respondents agreed with 16 of these assignments (80%). The agreed-upon items included otoscopy, adjustment of programmable and non-programmable hearing aids, hearing aid orientation for programmable hearing aids, real ear measures, pre and post-fit assessment, case history, cerumen management, pure tone air and bone conduction immittance, SRT, Stenger tests, most comfortable levels (MCL), uncomfortable levels (UCL), loudness mapping and independent counseling.

There were 18 items assigned by the author as appropriate duties for *either* (audiologist or audiology technician). Of these 18 items, the pre-survey respondents agreed with 10 of these assignments (55%). These items included checking hearing aids, minor repairs, screening interview (not case history), minor equipment maintenance, hearing aid cleaning, earmold tube replacement, outcome measure collection and analysis, daily biological calibration, progress note writing with co-signature, screening auditory brainstem response (ABR) and assisting the audiologist with the vestibular test battery. There were two items assigned by the author as *audiology technician* duties. These were reminder calls and equipment calibration. The pre-survey respondents agreed with both assignments.

Of the items assigned by the author as *audiologist* duties, the pre-survey respondents disagreed with four of these assignments. These included earmold impressions and patient preparation for ABR and electronystagmography (ENG) tests. Clearly, the respondents believed that these activities, once considered *audiologist* activities are now thought of as shared activities between the audiologist and the audiology technician. Earmold impressions and patient preparation for ABR and (ENG) tests were placed by the respondents in the *either* (audiologist or Audiology technician) category.

The other assignment disagreement was hearing aid orientation (for non-programmable instruments). The author assigned both programmable and non-programmable hearing aid orientations as *audiologist* duties. The respondents placed the programmable HAO in the audiologist arena but allowed for the non-programmable HAO to be accomplished by *either* (audiologist or audiology technician).

Appendix B. (Continued)

The respondents disagreed with eight of 18 items (44%) of the duties assigned by the author as *either* (audiologist or audiology technician) duties. Mostly, the respondents indicated that certain duties should be handled primarily by the audiology technician rather than by *either* (audiologist or audiology technician).

Some duties were assigned by the respondents as *audiology technician* only. These included shipping, mailing and ordering and stocking of supplies. The respondents split four items assigned to *either* (audiologist or audiology technician) between *either* and *audiology technician*. These include data entry, assisting the audiologist with programmable and non-programmable HAOs and assisting the audiologist with cerumen management. Two items that were assigned by the author as appropriate for *either* (audiologist or audiology technician) were assigned by the respondents as *audiologist* duties. These include hearing aid outcome data collection and analysis and screening ABR. This finding was surprising since in many locations, pediatric screening ABRs are conducted by medical or nursing assistants. Furthermore, outcome measures seem to be an appropriate area for collaboration between the audiologist and the audiology technician.

The main message gleaned from the responses to the pre-survey is that, based upon the author's concept of traditional thinking regarding audiologist duties, the role of the audiology technician appears to be expanding. The responses to the main survey should reveal whether this view is shared among the remainder of audiologists in the VA.

John Terry Berardino

Mr. Berardino is Chief of the Audiology and Speech Pathology Service at the James A. Haley Veterans' Hospital in Tampa, Florida. He has been a practicing audiologist for over 20 years. He has also practiced at a VA outpatient clinic and a multi-specialty private practice. He holds a Master of Public Health and a Master of Science in Audiology.