Research Utilization Support and Help (RUSH) Project

Final Report

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&

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1. Introduction

The completed utilization research sought to improve the awareness and implementation of Augmentative and Alternative Communication (AAC) strategies by licensed long-term care providers in accredited Alzheimer’s Care Units (ACUs). Outcomes of the Field Initiated Project #H133G040176, “AAC Applications in Dementia”, form the basis for the RUSH project. The FIP provided data to answer the question: What are the most effective input and output modes in a communication device to support conversations by persons with Alzheimer’s disease (AD)? The research utilization project used a combined best practices knowledge transfer model and a collaborative support model in a staggered treatment research design. We compiled a team of university-based clinical researchers, a community AD educator, a gerontology-certified project coordinator, and staff/administrators from nine ACUs to participate. This final report addresses the seven utilization outcomes that were proposed, and discusses research activities that were implemented to meet our four specific aims. The report concludes with a discussion of future implications.

2. Specific Aims

Specific aims for the utilization research were:

Specific Aim 1: To determine the differences between awareness and knowledge of AAC for persons with AD by licensed long-term care providers before and after collaborative training.
Specific Aim 2: To determine differences in frequency of use of AAC boards and rate of initiations of conversations by persons with AD before and after collaborative training of their care providers.

Specific Aim 3: To determine differences in satisfaction with AAC use by licensed long-term care providers before and after collaborative training.

Specific Aim 4: To determine the differences in program and state policies related to competencies for licensed long-term care providers in ACUs before and after collaborative training.

3. Major Activities

Major activities of the utilization research were:

1. Develop training curriculum and AAC materials for facilities.

2. Present training module to nine ACUs in a randomly assigned, staggered treatment experimental design.

3. Administer a series of questionnaires to determine the differences between awareness and implementation of AAC for persons with dementia by licensed long-term care providers before and after collaborative training.

4. Observe ACUs to determine differences in frequency of use of AAC boards by persons with dementia before and after collaborative training.

5. Determine satisfaction with AAC use by licensed long-term care providers before and after collaborative training.
6. Conduct interviews to determine differences in program and state policies related to competencies for long-term care providers in ACUs after collaborative training.

7. Analyze data and disseminate in articles, presentations and final report.

4. Accomplishments

4.1. Activity 1: Development of training curriculum

The training curriculum was developed by the project staff based on FIP results. Handouts corresponding to a PowerPoint presentation and pictures of materials are included in Appendixes A and B of this report.

Staff also developed the SpeechKIT, a communication board that consisted of 32 durable 2-D photographic images with printed word labels and a plastic clipboard with built-in storage capacity. Velcro was used to affix images to the board when in use. Up to six images could be displayed on the face of the clipboard at once. Images not in use could be stored inside the clipboard. The photographs + print included vocabulary related to autobiographical memories of elders in Oregon. A list of the photographic images used is included in this report (see Appendix C). In an effort to ensure that the photographs were representative of the intended concepts, a translucency survey was developed and administered to five project staff. Translucency refers to the relationship between a symbol (the photograph) and its referent (the word or concept that it depicts). For example, a photo of a tree has a high translucency rating when used to represent the word TREE. A picture of a desk has a low translucency rating when used to represent the word WORK. We measured translucency on a Likert scale varying from 1= no relationship between photo and referent to 7 = very strong relationship between
photo and referent. The mean translucency score for the 32 photographs in the SpeechKIT was 6.52.

4.2. Activity 2: Present training modules

The face-to-face training was delivered as part of workshops routinely provided by the State of Oregon to licensed long term care providers in ACUs. Joyce Beedle, AD educator, provided the workshops to 9 ACUs in the Portland, Oregon metropolitan area. The specific training schedule and the randomly assigned, staggered treatment design for pre- and post-testing in the 9 ACUs has been discussed in detail throughout the three previous progress reports. Materials (translated into Spanish, as needed) accompanied an interactive PowerPoint presentation that stimulated participants to discuss relevant concerns and to ask and answer questions throughout the training. Information was given about how to assemble and use the AAC materials, which were also provided as a part of training and dissemination. At the workshop, pairs of attendees were provided with materials to make a SpeechKIT. A make-and-take activity was part of the training. The number of SpeechKITS disseminated at each training depended on facility size (in terms of number of residents with AD) and number of participants.

Table 1 below lists the number of consenting participants, the approximate number of residents with AD in each ACU, and number of SpeechKITS created at each ACU training. A research team decision was made to provide a minimum of 2 SpeechKITS and a maximum of 10 SpeechKITS to each ACU, depending on the number of reported residents with AD at the start of the training, with one SpeechKIT available for every 5 residents. For example, administrators reported approximately 15 residents with AD in
ACU #1 where 4 participants were trained and 3 SpeechKITS were made; ACU #5 reported approximately 73 residents with AD and the maximum number of SpeechKITS (10) was provided to the 23 staff who were trained. Ratios for SpeechKITS were approximately 1:5 residents.

The number of caregivers at each training is not a reflection of the total number of staff at each facility. It is the goal of ACU administrators to have all staff at mandatory meetings; however staff attendance is not always as high as desired. Often, trainings occur on staff days off, staff or their families are sick, the facilities are understaffed so not everyone can attend the training, and compliance is an issue for individuals at such low pay levels. It must be noted, as well, that the number of residents with AD is very fluid in ACUs, and not easily tracked. As such, this is an estimate. Our goal was to provide a sufficient number of SpeechKITS to each facility so that they were readily accessible for use by staff. Unfortunately, ACU administrators find it difficult to comply with guidelines for the ratio of caregivers to persons with AD since the ACU population changes so rapidly and there is constant staff turnover. As such, our aim was to train the staff who attended the trainings and make sure that there were SpeechKITS available in each ACU for all staff to use.
Table 1. Number of consenting participants, approximate number of residents

With AD, and SpeechKITS created at each ACU training

<table>
<thead>
<tr>
<th>Alzheimer’s Care Unit (ACU)</th>
<th>Number of participants at each training</th>
<th>Approximate number of residents in facility reported with AD</th>
<th>Number of SpeechKITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>40</td>
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<td>4</td>
<td>19</td>
<td>54</td>
<td>10</td>
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<td>5</td>
<td>23</td>
<td>73</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>48</td>
<td>10</td>
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<td>7</td>
<td>13</td>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>7</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>8</td>
<td>25</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>93</td>
<td>300</td>
<td>55</td>
</tr>
</tbody>
</table>

4.3. Activity 3: Pre/post questionnaires

The pre/post questionnaire for RUSH trainees is comprised of 6 questions (see Appendixes D and E for English and Spanish, respectively). Questions 1-4 use a multiple choice answer format and address caregiver knowledge of communication difficulties in persons with dementia and of AAC. Questions are directly related to information provided in the training session. Questions 5 and 6 measure caregiver attitude about AAC. These questions are answered on a Likert scale ranging from 1-5.

Questionnaires were distributed to 90 caregivers who participated in the training at the nine ACUs at four standard times. Three of the original 93 consenting participants were not present to complete the questionnaires. Table 2 below shows the number of questionnaires collected at Times 1-4 for each ACU and the relationship of Time to the provision of Training. There were 73 respondents, who included 40 caregivers/CNAs, 12 activity staff, 12 medical aides, 5 administrators, 2 maintenance/housekeeper staff
and 2 LN/RN. A total of 252 questionnaires were collected (163 pre-training and 89 post-training). We did not have complete sets of 4-questionnaires for all participants, leading to the numbers expressed below in Table 2. Incomplete questionnaire sets were due to absences, work schedules, sickness, terminations, vacations, and expected attrition for staff. This table shows data for ACU groups. For example, for all of the ACUs in group 1 (ACU #1, 2, and 3), 12 participants completed the questionnaire at Time1, before they received training. Subsequently, this group participated in training. At Time2 (post-training), all 12 participants completed the questionnaire a second time. At Time3 (post-training), only 11 participants completed the questionnaire, and at Time4 (also post-training), only 10 participants completed the questionnaire. In summary, group 1 participants completed one questionnaire prior to training and three questionnaires subsequent to training. Group 2 participants completed two questionnaires prior to training, and two questionnaires subsequent to training. Group 3 participants completed four questionnaires and did not receive any training. Table 2, then, shows the staggered treatment model that was implemented to control for the passage of time.
Table 2. # Questionnaires collected at each ACU at four times in relationship to training

<table>
<thead>
<tr>
<th>Group</th>
<th>ACU</th>
<th>Time 1</th>
<th>Training</th>
<th>Time 2</th>
<th>Training</th>
<th>Time 3</th>
<th>Time 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>X</td>
<td>2</td>
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<td>1</td>
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<tr>
<td>2</td>
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<td>11</td>
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<tr>
<td>Total</td>
<td>73</td>
<td>59</td>
<td></td>
<td>63</td>
<td></td>
<td>57</td>
<td></td>
</tr>
</tbody>
</table>

4.4. Activity 4: ACU Observations

An observation form (see Appendix F) was designed so that research assistants could enter an ACU and collect data about conversational initiations and duration of AAC use during a 30-minute observation period. Dependent variables were: number of conversation initiations by caregivers with AAC; number of conversation initiations by residents with AAC; and number of brief or extended uses of AAC. Observations were conducted at three standard times. At each ACU, observations were conducted in 2-6 locations depending upon the size of the ACU and the range of activity settings.
available. Table 3 below shows the number of observations collected at Times 1-3 for each ACU and the relationship of Time to the provision of Training.

Table 3. # Observations conducted at each ACU at three times in relationship to training

<table>
<thead>
<tr>
<th>Group</th>
<th>ACU</th>
<th>Time 1</th>
<th>Training</th>
<th>Time 2</th>
<th>Training</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>X</td>
<td>3</td>
<td></td>
<td>2</td>
</tr>
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<td>1</td>
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<td>2</td>
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<tr>
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<td>6</td>
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<tr>
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<td>6</td>
<td>X</td>
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<tr>
<td>3</td>
<td>9</td>
<td>2</td>
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<td>2</td>
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<tr>
<td>Total</td>
<td></td>
<td>18</td>
<td></td>
<td>32</td>
<td></td>
<td>33</td>
</tr>
</tbody>
</table>

4.5. Activity 5: Satisfaction Interviews

The original application proposed to use four questions from the FIP Caregiver Satisfaction Scale to collect feedback data from participants on the perceived value of the trainings. Unfortunately, the original scale did not demonstrate content validity when data were analyzed. As an alternative, this project relied on tape recorded interviews with administrators at participating ACUs. The project coordinator interviewed two administrators from two separate ACUs for 20 to 30 minutes each. The interviews were
transcribed and common themes were extracted manually. Six probes used during the
interviews included:

1. Did you understand our intention when we asked you to participate?
2. Did your understanding change after you heard Joyce’s lecture? If yes, how? If
   no, why not?
3. Did your impressions on the importance of communication and the use of AAC in
   the ACU change after the lecture and make-and-take activity? If yes, how?
4. What are your impressions of the AAC board and pictures?
5. Do you see a way that you could support the use of AAC in your ACU? How?
6. Have you made any changes to practice or policy at your ACU as a result of the
   training provided?

The common themes identified by both of these interviews are listed in the

Table below and discussed in detail in results and analysis for Hypothesis 4.1.

Table 4. Common themes discussed by 2 ACU administrators in response to 6
   interview probes

<table>
<thead>
<tr>
<th>Theme</th>
<th>Admin #1</th>
<th>Admin #2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did not add AAC use to ACU procedures</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Communication boards are not a mandatory part of caregiver duties</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>AAC will be accessible to all residents &amp; staff</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Administrators will model AAC behavior with residents</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Do not foresee any changes in policy level in near future</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
4.6. Activity 6: Personal interviews

An open-ended, informal, three-hour final interview was held between principal investigators, research coordinator and Joyce Beedle, our AD Educator, to glean her insights into the impact of training and lessons learned to inform future efforts of this nature. Notes were taken by the research coordinator during this session. Themes from the interview are included in the Considerations section of this report under discussion of Hypothesis 2.1.

5. Hypothesis testing and results.

Hypotheses were generated for each specific aim in the original proposal for this utilization research. Below we state the related hypotheses and results of data analysis.

*Hypothesis 1.1:* Licensed long-term care providers who receive AAC training will demonstrate increases in awareness of usefulness of AAC boards for the AD residents, increased understanding of communication deficits of the residents, improved understanding of potential AAC use with the residents and improved understanding of ways to create AAC boards as compared to licensed long-term care providers who do not receive the training or who receive unrelated training.

*Results and analysis.* This hypothesis was tested by examining the percent of correct answers for Questions 1-4 on the questionnaire administered to ACU staff at four standard points in time. The dependent variable of total correct percent of points (out of a maximum of 13 points) for knowledge questions 1-4 was entered into a mixed model which took the clustering of ACU into effect. The independent variables were time (within subject) and training (between subject) in order to assess the relative effects of change over time and of training. An interaction was estimated between the
two independent variables as well. Estimated marginal means were derived to
determine the adjusted means when the other variables were controlled for. A
restricted maximum likelihood estimator was used to estimate fixed effects for this
model. The full mixed model showed an effect of training \( F [1,248] = 10.555, p = .001 \) and of the interaction between time and training \( F [1,248] = 10.935, p = .001 \).
When the data were collapsed over time, univariate tests showed that the effect of
training was significant, yielding \( F (1, 248) = 4.257, p = .040 \). Respondents showed an
adjusted mean of 63.56% (unadjusted mean 60.75%) on questionnaires collected prior
to training, while they showed an adjusted mean of 69.83% (unadjusted mean
64.09%) on questionnaires collected after training. The significant time by training
interaction shows a general trend of a significant increase immediately after training
and then a sharper decline in percent correct over time for those who were trained.
Figure 1 illustrates this trend.

We did not analyze for occupation since IV cell sizes were so unequal and we
had no hypothesis in that regard.
Hypothesis 2.1: Persons with AD will demonstrate higher frequency of use of AAC boards and greater initiation of conversation after their care providers receive training than before training.

Results and analysis. This hypothesis was tested by examining the results of observations conducted at each ACU at three standard points in time. Each of three indicators of AAC use (total # of AAC initiations of caregivers and residents combined, percent of extended AAC uses and percent of resident initiations) were entered into mixed models (one for each indicator) which took the clustering of ACU into effect. The independent variables were time (within subject) and training (between subject) in order to assess the relative effects of change over time and of training. An interaction was estimated between the two independent variables as well. Estimated marginal means were derived to determine the adjusted means when the other variables were controlled for. A restricted maximum likelihood estimator was used to estimate fixed effects for this model.
Total Number of AAC initiations. The full mixed model showed no main effect of time or training for this variable. However, when the data were collapsed over time, the univariate tests showed that the effect of training was significant for total number of AAC initiations, yielding $F(1, 75) = 4.824$, $p = .031$. ACUs that received training showed an estimated marginal mean of 1.43 (unadjusted mean of 2.24) AAC initiations on the part of residents and caregivers combined during observations conducted prior to training. Centers that received training had an estimated marginal mean of 7.8 (unadjusted mean of 6.57) during observations conducted after training. Figure 2 shows the changes in this variable over time in observations made pre-training versus post-training.

![Figure 2. Total # AAC Initiations](image)

Percent of extended AAC interactions. A similar analysis on the variable of percent of extended AAC interactions using the full model showed effects of time ($F(2,75) = 4.345$, $p = .016$) and of training ($F[1,75] = 9.965$, $p = .002$), with no
significant interaction. When results were collapsed over time univariate tests showed that the effect of training was significant, yielding \( F(1, 75) = 15.026, p = .000 \). ACUs showed an adjusted mean of only 2.2% (unadjusted mean 3.35%) extended AAC interactions during observations conducted prior to training, while they showed an adjusted mean of 23.9% (unadjusted mean 16.62%) during observations conducted after training. Figure 3 shows the changes in this variable over time in observations conducted pre-training versus post-training.

![Figure 3. % Extended AAC Interactions](image)

**Percent of AAC initiations by residents.** No effects were found for the variable percent of AAC initiations by residents. No specific training was conducted to train residents how to use the AAC devices, so this result is expected.

**Considerations.** It should be noted that the significant differences related to training that we found for the first two observational variables appear to be confined to a subset of the ACUs. Specifically, only three of the ACUs that received training showed any AAC use post-training, while the other three showed no AAC use at all, even after
training. This potentially negative finding, however, must be tempered by observations and experiences reported by our AD Educator who (through her continuing interactions with the ACUs) became aware of more AAC use than was evident to our observers during their brief and sporadic visits.

Ms. Beedle noted that in several of the ACUs, some residents came into the training session and, before it was over, the staff was already using the devices with them. These incidents provided a great opportunity for reinforcement of new learning. Ms. Beedle reports that every ACU that received training is now using the AAC boards with at least 1 person. As an example, one direct care provider began to use the board with a nonverbal resident who was usually completely silent. This resident would look at the pictures on the board and spontaneously produce verbal gestures, such as “oooh, aaah, yes, yes, yes”. The pictures appeared to trigger the verbal gestures. This caregiver was so moved by the resident’s responses, that she began using the board with other residents. Clearly a project of limited scope such as this one could not underwrite the effort needed to conduct a comprehensive sampling strategy that would no doubt have captured more of the AAC use that occurred in the ACUs after training.

**Hypothesis 3.1:** Licensed long-term providers who use AAC boards post-training will report higher satisfaction with communication between themselves and the residents with dementia than prior to training.

**Results and analysis.** This hypothesis was addressed by Questions 5 and 6 (Likert-type questions on attitudes toward the use of AAC with persons with dementia). This hypothesis was not supported: the means for both questions were 4 (on a 1-5
scale) at pre training and at post training. We believe that the questions were phrased in such a way that the desired answer was clear and that the result reflects a ceiling effect.

**Hypothesis 4.1:** ACU administrators will report the inclusion of language related to awareness and understanding of AAC for persons with AD in program policies.

**Results and analysis**

Interviews with the two ACU administrators, and subsequent discussion with the AD Educator, showed that the administrators did not add AAC use with persons with AD to ACU procedures or policies, since such procedural changes or accommodations would occur at the level of the “disclosure document”. A disclosure document constitutes a commitment to family members about how the ACU will function. The disclosure document describes how the ACU will provide care and who is going to provide care, as well as listing discharge criteria. Included in a disclosure document might be a statement that all staff receives monthly training on certain key topics. The topic of communication techniques (to enhance communication between residents and staff) is a training objective required by the state. Having received training on the use of AAC, participating ACUs are now in a position to add to disclosure documents language that assures that communication supports (such as AAC devices) will be used whenever appropriate. One of the participating ACUs is now in the process of rewriting its disclosure document to accommodate such language.

The two administrators interviewed commented that communication boards are not a mandatory part of caregiver duties, but that AAC is used more in a spontaneous manner. They recommend that staff always try to communicate with their patients and state that managers will continue to model the behavior by using AAC and having it
accessible. Although they will support efforts to use AAC in their ACUs they do not foresee any changes at the policy level in the near future.

**Hypothesis 4.2:** Language related to knowledge of AAC use will be added to State of Oregon Administrative Rules for endorsement of Alzheimer’s Care Units (411-57-000 (2)(c) page 6) and to state-sponsored training curricula.

**Results and analysis.** No date has yet been set at the state level to rewrite the OARs. Joyce Beedle, our AD Educator, has requested to be included in the rewrite when it occurs. She was informed verbally by the director of the Oregon Department of Health and Human Services that she will be included in this process.

**6. Outcome Summary**

Table 4 lists the proposed utilization outcomes from the grant application and summarizes how the outcomes were met in this research training project. Clearly, three types of data were collected and analyzed in this short 1-year project: pre- and post-training questionnaire results using multiple choice and Likert-type scale probes; (2) observational data where research assistants kept track of behaviors in the natural settings of the ACUs; and (3) qualitative data from interviews with ACU administrators and the AD Educator.
Table 4. Proposed utilization outcomes and results

<table>
<thead>
<tr>
<th>Utilization Outcome</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A. Increased understanding of communication deficits of persons with dementia, and increased understanding of AAC and its uses for the target population by long-term care providers.</td>
<td>Mean score on questions #1-4 for surveys administered pre-training was 54%. The mean score immediately post-training increased to 74%, showing a learning effect (n=235).</td>
</tr>
<tr>
<td>1B. Increased understanding of communication deficits of persons with dementia, and increased understanding of AAC and its uses for the target population by residential care program administrators.</td>
<td>Mean score on questions #1-4 for surveys administered pre-training was 75%. The mean score immediately post-training decreased to 69% (n=5).</td>
</tr>
<tr>
<td>2A. Increased awareness of ways to create home-made AAC boards by long-term care providers.</td>
<td>There was 100% awareness; care providers actually made AAC boards in a make-and-take activity during trainings.</td>
</tr>
<tr>
<td>2B. Increased awareness of ways to create home-made AAC boards by program administrators.</td>
<td>There was 100% awareness; administrators actually made AAC boards in a make-and-take activity during trainings.</td>
</tr>
<tr>
<td>3. Increased use of AAC boards in ADCUs for persons with dementia by individual care providers.</td>
<td>The number of AAC initiations increased significantly from 2.2 to 6.6 per observation.</td>
</tr>
<tr>
<td>4. Improved communication between care providers and their clients with dementia.</td>
<td>The number of extended AAC board interactions increased significantly from 4% to 17%.</td>
</tr>
<tr>
<td>5. Improved policies related to skill requirements and care standards</td>
<td>At the ACU level, one site is in the process of incorporating language related to communication supports in its disclosure document. At the state level, project staff has been promised a role in the re-write of Oregon Administrative Rules when it occurs.</td>
</tr>
</tbody>
</table>

7. Dissemination of Research Utilization

Our AD Educator has disseminated the techniques implemented in this project at the Oregon State University 2008 Gerontology conference on Active Approaches to Healthy Aging and to the Oregon Health Care Association (OHCA) Conference 2008.
In 2009 she will present techniques and results to the annual McGinty Memorial Conference on Alzheimer's disease (sponsored by the Oregon Chapter of the Alzheimer’s Association). More importantly, Ms. Beedle has incorporated AAC training into her regular training activities with ACUs around Oregon, significantly altering her teaching curriculum. She now routinely includes communication tips in her regular trainings that feature the use of non-speech communication modes (by both residents and staff). She reports that she now promotes the attitude that “everyone can communicate.” Now when she runs across attitudes that one resident or another couldn’t benefit from AAC, she says “Just give it a whirl with everyone, there will be some surprises.”

Drs. Fried-Oken and Rowland will discuss project results at the 2008 Biennial Conference of the International Society for Augmentative and Alternative Communication (ISAAC), in Montreal, Quebec in August, 2008. Additionally, a manuscript is being prepared for a peer-reviewed journal that targets the Alzheimer’s caregiving community.

8. Future implications

A number of issues have surfaced that address barriers toward AAC use in ACUs. Opportunity barriers for attitude, policy, practice, knowledge, and skills related to AAC use have been discussed frequently, in reference to schools, children, and the medical model of intervention (Beukelman and Mirenda, 2000). This utilization research extends the identification of AAC use barriers to the ACU and dementia communities.
There were vast differences in the size of the ACUs, the quality of care provided and the apparent investment of administrators in the activities promoted by this project. There was significant variability in the number of barriers within the ACUs and support from administrative staff for behavior change and adaptation of new information during daily care giving activities. Anecdotally, it was clear to us that the ACUs that really embraced the AAC use after training were those that enjoyed a strong initial “buy in” from the administrative level and continued administrative support for project participation.

This project attempted to reduce skill and knowledge barriers for AAC use in the ACUs. While knowledge changed after training, maintenance of AAC knowledge and use did not continue beyond the first post-training questionnaire and observation. In other words, long term care staff decreased their use of the communication boards without further support. The implication here is that training needs to be ongoing. One single in-service training opportunity is not sufficient to change many opportunity barriers. Another possible barrier is that the attendees were required to participate in the training, a possible deterrent to motivation (although they could not participate in the research aspects of the project unless they provided informed consent). We demonstrated how to make the boards and showed participants how to use them, but we did not demonstrate successful use with adults with dementia. Future trainings should include videotaped demonstrations of the use of AAC by the target population. The actual visualization of improved conversation with AAC use would help change attitudes toward its integration into daily environments. Videotapes for trainings are common tools used for dementia caregiver training, such as those available from
Healing Arts Communication (How to Communicate with Someone who has Alzheimer’s Disease).

Another barrier that we encountered was that some participants appeared to persist in negative attitudes about “who” would benefit from the AAC boards. Even after training, some staff and administrators would identify only a limited group of individuals who might use the boards. Good candidates tended to be residents who were in the moderate stages (not too severe and not too high functioning). It would be important to add as part of the training curriculum how to use AAC tools with elders with all levels of dementia. Again, demonstration by video examples would be beneficial. Informal feedback during interviews with the two ACU administrators also suggested that if they had communication boards with symbols that represented ADLs and daily basic needs they would use the boards more often. Messaging or vocabulary selection is always an elephant in the AAC closet (Fried-Oken & Stewart, 1992). Clinicians and researchers alike stress the importance of selecting words that meet the needs of users. Perhaps a future strategy would be to identify vocabulary with the ACU and staff, then find pictures to match the words, and train staff to make and use the boards with ACU-specific messages related to ADLs. While the generalizability of the research utilization project might decrease with ACU-specific applications, use barriers for elders with AD (our ultimate goal) might be reduced so that communication is enhanced.

An unanticipated and positive outcome of the training, reported by our AD Educator, was an elevation in staff self esteem by virtue of their involvement in our research project. Nurse aides seem to feel that they are the bottom rung of the employment ladder at ACUs. The fact that their opinions and help were valued as part
of a scientific research endeavor involving state-of-the-art clinical strategies appeared to boost their confidence and self-worth. This admittedly subjective analysis suggests a promising “in” for future training.

A next step might be to extrapolate this training to families. Our AD Educator encouraged staff to tell families about the AAC boards. She told the staff that families should use the devices so that they “have magic again” with their family member. Often, family members do not know how to communicate with their loved ones who have dementia. Families ask for skills and knowledge to reduce communication barriers, and want to participate in training. Our curriculum, suitably adapted, might help families and volunteers who are at a loss regarding how to interact with elders with dementia. Fortunately, that is part of the OARs for ACUs; a monthly family support group is required at each ACU. A family-focused AAC training based on the training curriculum developed for this project could be offered as one of these mandatory gatherings. Finally, we suggest implementing this community-based training for ALL residents with dementia, regardless of impairment level or functioning level. While staff might have preconceived notions about whom this strategy would benefit, we suggest that implementation with all residents might improve communication, cooperation, and attitudes in the ACUs. As described above, we believe that this strategy is easily transportable to the home environment, and can offer families another tool for communication. We do suggest that partnering with a community-based educator who is knowledgeable, reputable, established, and well-respected by the intended audience and administrators is critical to success.
The RUA can be viewed as a model demonstration project. First, the initial FIP objectives were derived from consumer-driven problems with opportunities for communication that were observed in clinical practice. The FIP research results fostered data-driven ‘best practices.’ The RUA translated results from the FIP into language that is accessible and provided supporting materials that were, indeed, manipulable [creation of SpeechKITS] by the intended audience. This, in turn, transferred knowledge that ultimately improved the lives of people with disabilities. It is possible to change the content of this RUA, AAC for persons with AD, and to use the same methods to obtain similar results with different populations, and perhaps beyond healthcare to other disability domains (such as education, employment). Certainly, the staggered treatment approach is a successful, objective way to measure training effects. It supports one of NIDRR’s strategic goals, the promotion of effective use of scientific-based knowledge, technologies, and applications to inform disability and rehabilitation policy, improve practice, and enhance the lives of individuals with disabilities.

References
