



ASHA KIRAN

May 2005

Spring Edition of the Asian-Indian Caucus Newsletter

CEUs through AIC

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Presidents Message

Greetings!

I write this message with a sense of pride over the achievements of the past year and in the goals and activities we have set our sights on this year. I am especially indebted to the tireless efforts of our committee members who lead the charge on our various projects as well as the time, interest, and efforts of our members. I am thrilled to see the momentum of this caucus soar (especially over the past few years) and am confident that our collective efforts will continue to strengthen the caucus as a voice for individuals of Asian Indian origin within ASHA.

The AIC has always been (and will continue to be) very active at the national level within ASHA. You can be rest assured that your caucus is well represented in activities related to the ASHA Office of Multicultural Affairs and the ASHA Multicultural Issues Board. However, an important focus of this committee also has been to provide support and meet the needs of its members in the trenches and to ensure that participation in caucus activities is a “value-added” experience for each one of its members. In this newsletter, we have outlined many activities that AIC is organizing this year to meet the needs expressed by members in the past year. We hope that you will take advantage of these activities as well as seize the opportunity for more active involvement in your caucus.

As always, I strongly urge members to consider serving in the AIC and participating in its governance. As you browse through this newsletter, do not hesitate to contact one of us if there are projects/activities that match your interests. Together, we will continue to make a difference and advance our mission!

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From the Editors

It is that time of the year again and we are happy to release the third newsletter under our two-year tenure as co-editors of the Asha Kiran. This time around the newsletter features four interesting and informative articles. These articles touch upon topics of both research and clinical relevance, some based on leading edge technology in communication disorders. We would like to acknowledge and thank the contributors and the reviewers for all their work. In addition, this newsletter also brings valuable information to members regarding upcoming educational and ASHA CEU activities organized and supervised through the caucus.

For those of you who were unable to attend the ASHA conference held in Philadelphia, PA, we are happy to inform you of the resounding support that we received from the members who attended the AIC meeting at the conference. Through this edition of the newsletter we aim to capture and reflect the varied interests and activities within our professional group. One of the articles in the current newsletter is also a result of a contact made during the AIC meeting at ASHA.

At this time, contributions for the next AIC newsletter, which is scheduled for November 2005, are invited. Interested individuals are encouraged to contact Anu Subramanian (subramanian.anu@gmail.com) or Jay Sasisekaran (jsasisekaran@gmail.com). Furthermore, individuals interested in serving on the newsletter editorial board are requested to contact us. This is a wonderful opportunity for individuals wishing to be actively involved with the official activities of the caucus. As always, we welcome any correspondence regarding topics related to the newsletter and are waiting for our mailboxes to be filled.

Happy Spring and Summer to all!

Anu Subramanian & Jay Sasisekaran

AIC Representatives at ASHA

Nidhi Mahendra is the chair of the MIB for 2004-2005.

Shubha Kashinath is a member of the MIB for 2004-2006.



CEU Opportunity through the AIC

AIC is proud to announce its FIRST Continuing Education Offering in July 2005!

Topic: Aphasia: Recovery and Intervention

Presenter: Swathi Kiran, Ph.D., CCC-SLP
Assistant Professor, Department of Communication Sciences and Disorders
University of Texas at Austin

Format: Online self-study

Date/Time: To be announced

Look out for further e-announcements regarding this CEU opportunity!

We are grateful to the Department of Communication Disorders at Florida State University
for their assistance in this effort



Perfusion Imaging and Localization of Function

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A primary method of determining brain-behavior relationships of cognitive-linguistic processes is lesion-deficit correlation consequent to brain injury. However, lesion-deficit correlations are not always perfect, because the brain undergoes substantial reorganization of function following injury and there is considerable inter individual variability [1]. Hence lesion-deficit correlations are best examined prior to the occurrence of neural re-organization, that is, in the hyperacute phase (within 24 hours of onset) of brain damage. Also traditional neuroimaging techniques (magnetic resonance imaging - MRI) are not sufficiently sensitive measures of neural dysfunction in the hyperacute phase. This article describes two recent neuroimaging techniques that are highly sensitive in demonstrating neural dysfunction in the hyperacute phase of brain damage.

Perfusion weighted imaging (PWI) measures quantity of regional cerebral blood flow by imaging either flow rate of a contrast agent (First Pass Bolus Tracking Technique) or amount of electromagnetically inverted protons (Arterial Spin Labeling). The quantitative aspect of PWI reveals neural tissue with reduced blood flow (hypoperfusion) within a few minutes of stroke onset. Hypoperfused neural tissues receive sufficient blood to survive, but not sufficient enough to function normally (18-20 ml/100gm/mm), rendering functional lesions. PWI identifies tissues that are potentially salvageable with timely increase of blood flow using techniques such as inducted blood pressure elevation (reperfusion) and carotid endarterectomy.

Diffusion Weighted Imaging (DWI), measures the relative diffusion of water molecules in neural tissues. DWI reveals regions of irreversible neural damage (ischemia) following extreme and prolonged reduction in blood flow (<10 ml/100gm/mm) within a few minutes of onset. In other words, PWI reveals neural tissue with the potential of reversible damage and DWI reveals tissue with irreversible damage before these changes can be detected on an MRI scan.

Regions of hypoperfusion revealed by PWI in the hyperacute stage of stroke are found to correlate better with deficits than CT scans, MRI, or DWI [e.g., 2] perhaps because the brain has not yet structurally and functionally re-organized. For example, Hillis et al. [2] demonstrated that hypoperfusion in the left posterior inferior frontal gyrus occurred in all their patients with apraxia, as opposed to previous unreliable findings of damage to insula. PWI is clinically relevant in the chronic stages of stroke as well. For example, Love et al. [3] studied an individual whose alexia was inexplicable even 16 years after stroke because MRI revealed no cortical damage. However, PWI revealed hypoperfusion of the angular gyrus, a cortical region with a major role in reading. PWI has also been used to demonstrate neural correlates of spontaneous recovery. For example, Hillis et al. [4] documented a dyslexic patient whose improvement in reading correlated with reperfusion of left parietal regions after carotid endarterectomy. These studies demonstrate that due to their sensitivity during the hyperacute phase of brain damage, PWI and DWI have emerged as promising technologies to resolve some past inconsistencies in lesion-deficit correlations, and are useful tools in documenting neural changes related to recovery of function.

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Awareness and Implementation of Sound Field Distribution Systems in Schools

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In a typical classroom a child learns by listening in spite of movement by a speaker. Adults with normal hearing can perform well with a signal-to-noise-ratio (SNR) of about +6dB. Children need a better SNR due to emerging language skills and neurological processes. Typical classrooms only provide a SNR of about +4 dB [1]. For children who have problems with language, learning, or hearing, the SNR needs vary and can be up to +20dB. This improvement in SNR can be achieved by personal and sound field frequency modulated (FM) distribution systems, and infra-red sound field distribution systems. Literacy achievements for grades 1-3 have increased significantly with the use of these systems in the classroom [2, 3].

This article is a brief description of a survey carried out by the graduate Audiology class at California State University, Sacramento. The purpose of this survey was to create awareness among graduate students regarding the current status of implementation of classroom amplification systems in school setups.

Twenty five regular schools in two school districts in Northern California were selected at random. Students mostly spoke to special education teachers, resource room specialists, or speech-language pathologists. If these professionals were unavailable, they spoke to school principals and vice-principals.

The following questions were asked:

- 1) Are you aware of sound field distribution/ FM / classroom amplification systems?
- 2) Do you have or have you considered installing a sound field distribution system?
- 3) Do you have children in your school wearing personal FM systems?
- 4) If yes, who recommended the system?
- 5) Who paid for the system and who is responsible for its maintenance?

Of the respondents, only 5% knew these systems, 5% were vaguely aware or had heard of them and 90% did not know about them. Ten children with varying degrees of hearing loss were reported to be using personal FM systems. Typically, initial recommendations for such systems were made by the audiologist.

The determination of whether or not a child received the device was made by the Individualized Educational Plan (IEP) team. FM systems were never provided (even when recommended) for children with central auditory processing problems without evidence that their performance had fallen behind grade



level. If a child qualified for a personal FM system under the Individuals with Disabilities Act (IDEA), then the school district funded it (\$300-\$1200). However, such children rarely received high-end FM systems compatible with their advanced signal processing digital hearing aids. In general, advantages of sound field systems were acknowledged by all surveyed, but were considered to be outside the school budget (typically \$900-\$3000 per classroom). Finally, care of the devices was a concern, as teachers did not have the resources to maintain these devices. Often the systems were not rugged to withstand wear and tear. As a result, children with FM systems had been reported to go for long periods of time without their devices.

Summarizing, our survey results indicated the need for awareness regarding benefits of improving the SNR and training in maintenance of these systems. Sound field distribution systems should be mandatory to provide optimal learning environments in schools.

References

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Large classroom FM transmission system



Use of High Speed Digital Imaging in Clinical Settings

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Fundamental to improving voice treatment is the direct observation of the vibratory motion of vocal folds. In the last several years new concepts in the area of voice, voice diagnostics, image analysis and modeling have been developed to shed light on the mechanism of irregular vocal fold vibrations. Videostroboscopy is routinely used in clinic for examination of vocal fold dynamics.



It captures vocal fold motion at reduced rate (30 frames per second) making it difficult to assess vibratory onset /offset. In addition to the above, known issues with pitch extraction and stroboscopic light trigger makes it less valid for aperiodic voices. High speed digital imaging (HSDI) appears to overcome these limitations with increased capture rate. Hence it is not limited to periodic voices. HSDI also initiates recording immediately, regardless of the loudness of voice [2], making vibratory onset and offset analysis possible.

HSDI used to be expensive, difficult to use, and bulky [3], with films requiring development. For the past 50 years there have been no commercially available products. Recent developments in digital technology have led to improvements in the camera, sensor systems and memory, thereby increasing the speed and resolution of the images obtained using HSDI. Currently available high speed cameras reach a maximum speed of 8000 to 10000 frames per second. Problems of videostroboscopy in observing the cycle-to-cycle aperiodicities in the vocal fold vibrations can thus be overcome using HSDI combining motion analysis with image processing. Characterizing the three dimensional movement of the vocal fold vibrations in the lateral (adduction vs. abduction), vertical (mucosal wave) and the inferior and superior dimensions, is also possible using HSDI.

Application of HSDI for laryngeal imaging

1. Evaluation of various types of vocal fold vibrations, even extremely aperiodic voice qualities
2. Independent assessment of right and left vocal fold motions, glottal symmetry, and glottal area estimates
3. Assessment of voice onset and offset
4. Assessment of acute hoarseness
5. Simultaneous acoustic and electroglottographic recordings

Specific types of clinical cases that may benefit from HSDI

1. Assessment of moderate to severe hoarseness (e.g., Type III & Type IV dysphonias with moderate to severe hoarseness).
2. Distinguishing muscle tension dysphonia from spastic dysphonia
3. Evaluating 'observed stiffness' or limited vocal fold vibration
4. Diplophonia

In summary, HSDI allows for physiologically based interpretation of irregular vocal fold vibrations that can be based on the classic cover body theory [4] of vocal fold vibrations. Two sequential recordings may aid in complete analysis of vocal fold vibrations: 1) stroboscopy / endoscopy for structural examinations, and 2) simultaneous high speed and electroglottographic recordings.

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The Role of the Respiratory System in Loudness Changes to Speech

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Whereas many physiological mechanisms can increase the loudness of speech, studies on intentional changes to loudness suggest that increasing respiratory drive is preferred [1, 2]. The respiratory system has been recently found to be the main contributor of not only sentence level changes to loudness, but also transient changes in loudness related to word-stress [1]. Transient changes in loudness during speech have thus far been viewed as being driven by laryngeal adjustments. Thus, until recently, the respiratory system had been looked as merely a scaffolding for speech, i.e., the source for generating a constant sub-glottal pressure. Now, researchers are envisioning a more dynamic role for the respiratory system.

More recently, Huber, Chandrasekaran and Wolstencroft (in press), using respiratory kinematic measures have shown that control of the rib cage and abdomen during speech is sensitive to the context in which loudness increase is elicited [3]. That is, whereas speaking with background noise and visual feedback both increase loudness to similar sound pressure levels (SPLs) when compared to habitual loudness levels, the respiratory system responds differently in each case. For the noise condition, individuals speak with a higher lung volume when compared to habitual speech, thereby utilizing higher recoil pressures of the lungs, an energy efficient strategy. Additionally, they also increase expiratory tension by speaking closer to the end expiratory level (EEL, the lowest point of rest breath). The visual feedback condition, elicits a greater increase in the lung volume at which speech is initiated. However, there is no significant increase in expiratory muscle tension in this condition. Thus, although the SPL increases from habitual levels are comparable for the two conditions; the respiratory strategies differ, reinforcing recent findings about the dynamic nature of the respiratory system.

Researchers have shown that training hypophonic individuals, for example, individuals with Parkinson's disease, to increase their loudness has tremendous value in improving the intelligibility and naturalness of their speech. The respiratory system is the prima donna for increasing loudness. Considering that the respiratory system responds in a unique manner to different cues, loudness training should utilize more than one type of cuing strategy. Examples of cuing strategies are instructing speakers to speak at twice their habitual levels, speaking with visual feedback (using sound level meters, computer software), speaking under background noise (Lombard effect) and increasing listener distance. Training individuals to increase their loudness, ideally, should use a combination of these to explore the entire respiratory range. Utilizing the entire range is especially important for individuals who have poor respiratory support for speech (e.g. individuals with PD, cerebral palsy).

References

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Call for Contributions

Interested members are requested to send this information to Anu Subramanian (subramanian.anu@gmail.com) or Jay Sasisekaran (jsasisekaran@gmail.com).

_____ Yes, I'd like to contribute to the November 2005 newsletter.

_____ I am unable to contribute to the November 2005 newsletter, but I'd like to contribute for the next edition.

Print Name

Email

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Our special thanks to the reviewers of the articles published in this newsletter.



Current AIC Projects

Here are some of the projects that current committee members are spearheading:

Website enhancement and Development

Have you had a chance to visit the AIC website (www.asianindiancaucus.org)? If not, check it out! We are pleased to have a web space with opportunities for many new features such as discussion boards, online chat rooms and advertising space. Dr. Megha Sundara will be leading the enhancement efforts with Jayanthi Sasisekaran. So, if you are a tech-savvy computer whiz---feel free to contact Dr. Sundara (msundara@u.washington.edu) with your comments, suggestions...or your time! We look forward to a user-friendly, informative, and efficient web portal to spread the AIC message in this digital age!

Peer Mentoring Network

In response to the needs of many of our student members who are beginning their foray into the field, we are developing a mentoring program within AIC for beginning clinicians and researchers to provide them with an opportunity to connect with another AIC member who may be able to guide them with their knowledge and experience. Dr. Shubha Kashinath and Dr. Anu Subramanian are developing this program and hope to share more details shortly! Please contact them at skashina@fsu.edu or subramanian.anu@gmail.com, if you are interested in developing the program or participating as a mentor/mentee.

Resource Materials

For the past few years, AIC has actively participated in a joint exhibit booth at the Annual ASHA Convention with other multicultural constituency groups. This year, in addition to recruiting new members and sharing information about the caucus, we hope to develop 2-3 informational fliers about service delivery issues related to individuals of Asian Indian origin. Dr. Megha Sundara and Raksha Anand are coordinating this project and we hope you will consider participating by being involved in the writing process or sharing your ideas/expertise. If you are interested in this project, please contact them at msundara@u.washington.edu or rakshar@yahoo.com.



Membership Form

Date: _____ Place: _____
Last Name*: _____ First Name*: _____ Middle Initials: _____

Type of Membership*: Professional _____ Student _____

Membership charges: \$20 for professionals, and \$ 10 for students

Mailing Address*: Street 1 _____

Street 2 _____

City _____ Pin _____

Country _____

Other Contact information*: Phone (H) _____ ® _____

Email: _____

Current Title*: _____

Organization: _____

Type of setting: School _____

University _____

Hospital _____

Rehab/Agency _____

Private practice _____

Area of Specialization: _____

Membership: ASHA _____ NSSHLA _____ Special Interest Division _____

Certification (ASHA): CCC-SLP _____ CCC-Aud _____

If certified, do you consent to be listed as a service provider for individuals with Asian Indian origin in your geographical area? _____ Yes _____ No

Please include the membership fees (Professionals \$ 20, Students \$ 10) along with this form and mail to:

Shubha Kashinath, Ph. D.

1207 Oaks Edge Road

Tallahassee, FL 32317

IMPORTANT: Please address all checks to Shubha Kashinath

