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# Audiology Services at Remote Area Medical Expeditions in Southern Appalachia

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# Audiology Services at Remote Area Medical Expeditions in Southern Appalachia

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# **Audiology Services at Remote Area Medical Expeditions in Southern Appalachia**

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# What is Remote Area Medical (RAM)?

- Founded by Stan Brock
  - English schoolboy; father assigned to a position in Guyana, he takes a job as a cowboy at age 17, and chooses not to go back to school in England
  - After identifying the need to provide healthcare to remote areas in the Amazon Basin, he taught himself to fly, and developed an airborne medical service for rural inhabitants and their animals
  - After years of helping friends and neighbors in South America, flying for, and contributing to Wild Kingdom, and some acting, Brock's RAM began healthcare missions in 1985



# What is Remote Area Medical (RAM)?

- RAM's Mission
  - “To prevent pain and alleviate suffering by providing free, quality healthcare to those in need.”
  - “The Remote Area Medical Volunteer Corps is a non-profit, volunteer, airborne relief corps dedicated to serving mankind by providing free health care, dental care, eye care, veterinary services, and technical and educational assistance to people in remote areas of the United States and the world.”
    - Although focused on Dental and Vision care; medical and women's services are provided when licensed volunteers are available – Audiology offered as part of Medical service

# Patient Load/Staffing Considerations

- Gates are open from 6AM-6PM, in audiology section, patients were seen for about 10 hours/day.
- Most patients seen also have places (numbered) in line at either vision or dental services
  - Helpful to have additional volunteers to help patients get back to other services to maintain place in line









# Patient Load/Staffing Considerations

- Volunteers are drawn from a few sources:
  - Professionals who work in the disciplines offered sign up from distant or local practices (vision and dental)
  - Medical, Nursing, Audiology, SLP, Dental Hygiene, PT, Counseling, Clinical Psych students assist w/ pt. management and provide services as appropriate
  - Interpreters for signers and Spanish speakers
  - Community/church groups provide food and volunteers to help patients access services











# Visit Becky's Place

- ~~8:30 Diabetes~~
- ~~9:30 Tobacco Cessation~~
- ~~10:30 Breast Cancer~~
- ~~11:30 Cervical Cancer~~
- ~~12:30 Male Cancer~~
- ~~1:30 Ovarian Cancer~~
- ~~2:30 Tobacco Cessation~~
- ~~3:30 Breast Cancer~~
- 4:30 Cervical Cancer

# RAM in Bristol, VA; 2012

## Expedition Statistics

**702 Volunteers** provided  
**1,750 Free Services** to  
**1,584 Patients**  
**2.1%** of vision & dental services were  
provided to **Children.**

Services included:

**Dentistry** (cleanings, fillings, extractions) for **892 patients**;

**Vision** (free eye exam & **422** new pairs of eyeglasses glasses) for **515 patients** (some get reading glasses, or exams w/out glasses);

and **Medical** (including **44 mammograms**) for **272 patients.**

The **Total Value of Free Care** provided by volunteers reached **\$575,199.00**



# RAM in Wise, VA; 2012

## Expedition Statistics

**1379** Volunteers provided

**5,193** Free Services to

**2,442** Patients

**3.2%** of vision & dental services were provided to **Children.**

Services included:

**Dentistry** (cleanings, fillings, extractions) for **1,453 patients;**

**Vision** (free eye exam & **929** new pairs of eyeglasses glasses) for **994 patients;**

and **Medical** (including **127 mammograms**) for **713 patients.**

The **Total Value of Free Care** provided by volunteers reached **\$1,954,299.00**

# RAM Totals for 2010

## Expedition Statistics

**13,058 Volunteers** provided

**42,585 Free Services** to

**22,983 Patients**

**Dentistry** (cleanings, fillings, extractions) for **13,240 patients**; **10,515 fillings**, **3,162 cleanings**, and **21,190 extractions**

**Vision** (free eye exam & **7,756** new pairs of eyeglasses glasses) for **10,721 patients** (some get reading glasses, or exams w/out glasses);

and **Medical** (including **903 mammograms**) for **17,721 patients**.

The **Total Value of Free Care** provided by volunteers reached **\$9,862,980**

\*These numbers represent U S expeditions. Statistics for international expeditions and veterinary expeditions still to be reported.

Feb 4-5	<a href="#">Knox County, Knoxville, TN</a> - Jacob Building	D, Vis, M, W
March 3-4	<a href="#">Rockbridge Co., Buena Vista, VA</a> - Southern Virginia University	D, Vis, M
March 10-11	<a href="#">Rhea Co., Evensville, TN</a> - Rhea County HS	D, Vis
March 22-25*	Oakland, CA - Oakland Coliseum, East Concourse	D, Vis, M
March 30-April 2*	Sacramento, CA - Cal Expo, Buildings C & D	D, Vis, M
April 13-15	<a href="#">Sullivan County, Bristol, TN</a> - BMS	D, Vis, M, W
May 19-20	<a href="#">Franklin County, Sewanee, TN</a> - University of the South	D, Vis, M, W
June 2-3	<a href="#">Claiborne County, Harrogate, TN</a> - Lincoln Memorial University	D, Vis, M, W, Vet
June 9-10**	<a href="#">Pikeville, KY</a>	D, Vis, M
July 7-9	<a href="#">Rosebud, South Dakota</a>	D, Vis, M
July 12-15	<a href="#">Pine Ridge, South Dakota</a>	D. Vis, M, W

July 20-22	<a href="#">Wise County, VA, at the Wise County Fairground</a>	D, Vis, M, W
July 23-27	Operation Lonestar - Brownsville, TX	D, Vis, M, W
August 4-5	<a href="#">Jefferson County, Dandridge, TN</a>	D, Vis, M, W
August 25-26***	<a href="#">Oklahoma City, OK</a>	D, Vis, M
Sept 8-9**	<a href="#">Pulaski County, Somerset, KY</a> - Southwestern High School	D, Vis, M
Sept. 16-30	Guyana, South America - For info & to volunteer: <a href="#">e-mail RAM</a>	D, Vis, M
September 22-23	<a href="#">Hamilton County, East Ridge, TN</a> - Camp Jordan	D, Vis, M, W
October 6-7	<a href="#">Buchanan County, Grundy, VA</a>	D, Vis, M
Nov 3-4	<a href="#">Pickett County, Byrdstown, TN</a> - Pickett County K-8	D, Vis, M, W
Nov 10	Knoxville <a href="#">Veterans Stand Down</a>	D, Vis

# RAM at BMS (2010-2013)

Services Provided/Coordinated by ETSU Audiology:

1. Puretone air conduction threshold
2. Tympanometry with AR screen
3. Hearing protection, and related counseling/education
4. EMIs, and at follow-up, hearing aid orientation
5. ENT exams (including levage for earmold impressions)
6. Vestibular assessment
7. SLP services including oral screenings and educational sessions also provided (similar to those offered at races)

Tri-Cities RAM organizers estimated that if patients had paid for the medical services provided during last year's (2012) RAM, it would have cost \$575,199. Audiology contributed approximately \$100,000. (Johnson City Press, 2013)

# Equipment Considerations

- At a minimum for an event such as Bristol (with pt. population estimated between 1,000-1,500; RAM can provide estimates of attendance ahead of time):
  - Scopes, specula, wipes, antibacterials for 150 pts.
  - 3 audiometers (portables), headphones/inserts
  - 1 tymp screener (having a second not necessary, but would speed process during busier times)
  - Impression material and related accessories for 100 hearing aids (depends on anticipated patient census)
  - Related order forms for earmold impressions, follow-up information, scheduling



# Patient Load/Staffing Considerations

- Services provided for up to 30 hours over three days (Sunday is ½ day)
  - We averaged about **5 patients per hour** across the three years
  - Great variability; range of patients/hour=0-12/hour
  - At least six students and 3 faculty/supervisors present at all times
  - We have found that approximately 10% of all attendees will request, and wait for, hearing tests (if 1,000 patients are expected, then approx. 100 will attend audiology)
  - Nearly half of those patients will be candidates for hearing aids



# RAM in Southern Appalachia: Student Volunteers for Audiologic Testing

Year	Total AUD Students	Total Patient Contacts	Total Hours Worked/ Supervised
2010	16	133	184
2012	16	136	168
2013	14	95	126
Total:	46	364	478

# Problems Arising: Test Environment

- Noise levels
  - Exceeded ANSI standards; Elevator, pts in waiting area, vision patients entering and exiting test area
  - NOTE: SLMs have not yet been employed to measure the levels. This omission will be corrected next year
  - From 2010-2012: Biological check indicated up to a 15dB shift in threshold estimation at 250 Hz; 10 dB at 500 Hz; 5 dB at 1 kHz
  - In 2013 the noise levels were lower due to changes in the space provided for testing, and biological check indicated the influence on threshold of normal hearing listeners decreased to 10 dB at 250 and no effect at 500 Hz or higher
  - Noise level exacerbated by pts in waiting area, resolved somewhat when we were given more room

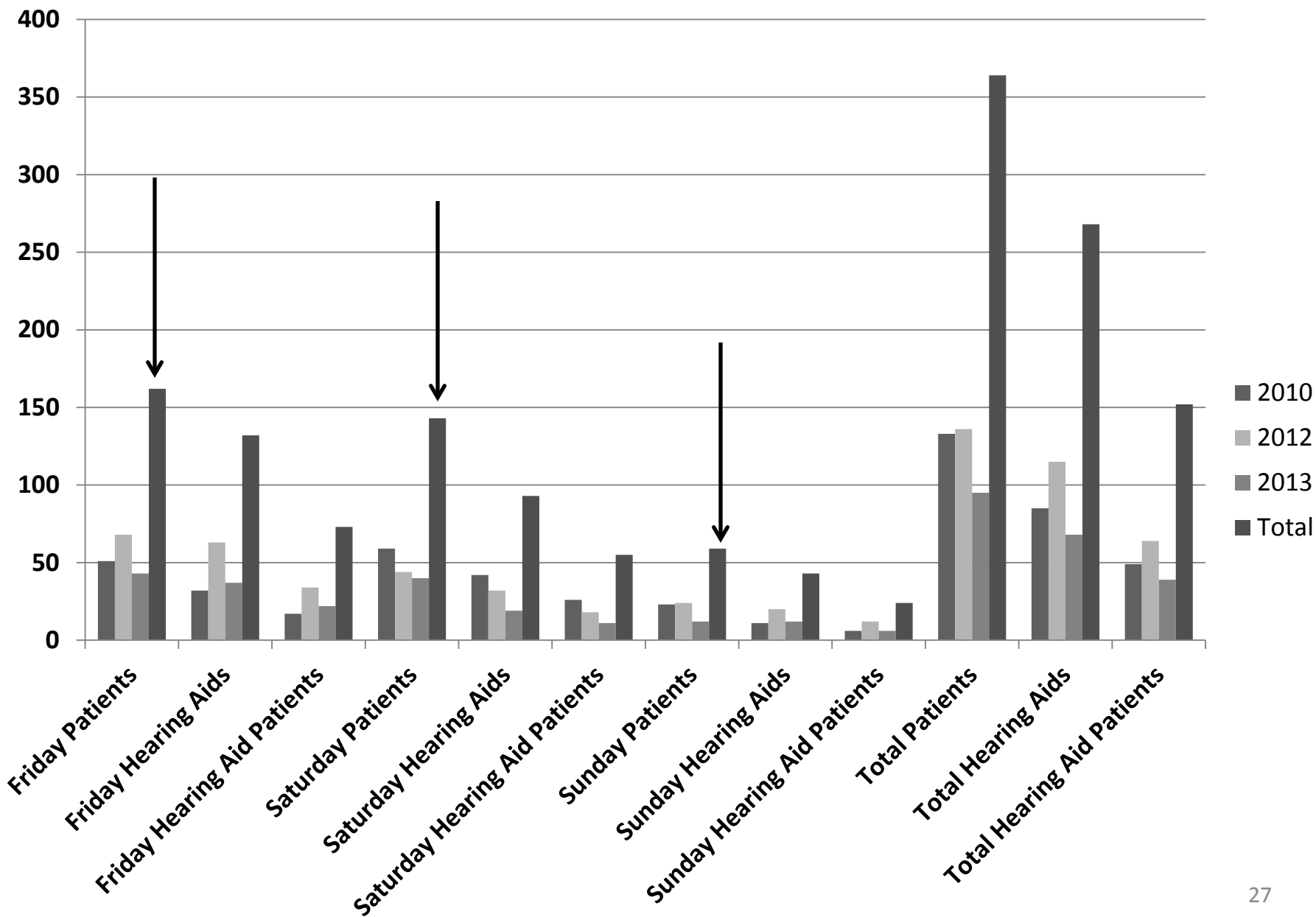
# Test Environment: Options(?)

- Measure thresholds prior to fitting at f/u
  - Would allow for BC testing
    - Presence of ENT at the RAM event allowed pts w/ suspected conductive hearing loss to be cleared
  - Would give a more accurate estimate of threshold by which to set target values
    - If judged by need for f/u after fitting, the procedure we've employed has been effective
  - Hire/rent/borrow mobile test suite
    - Would limit the number of pts seen, although this is the procedure at the Wise, VA RAM events (provided by Rotary Club)

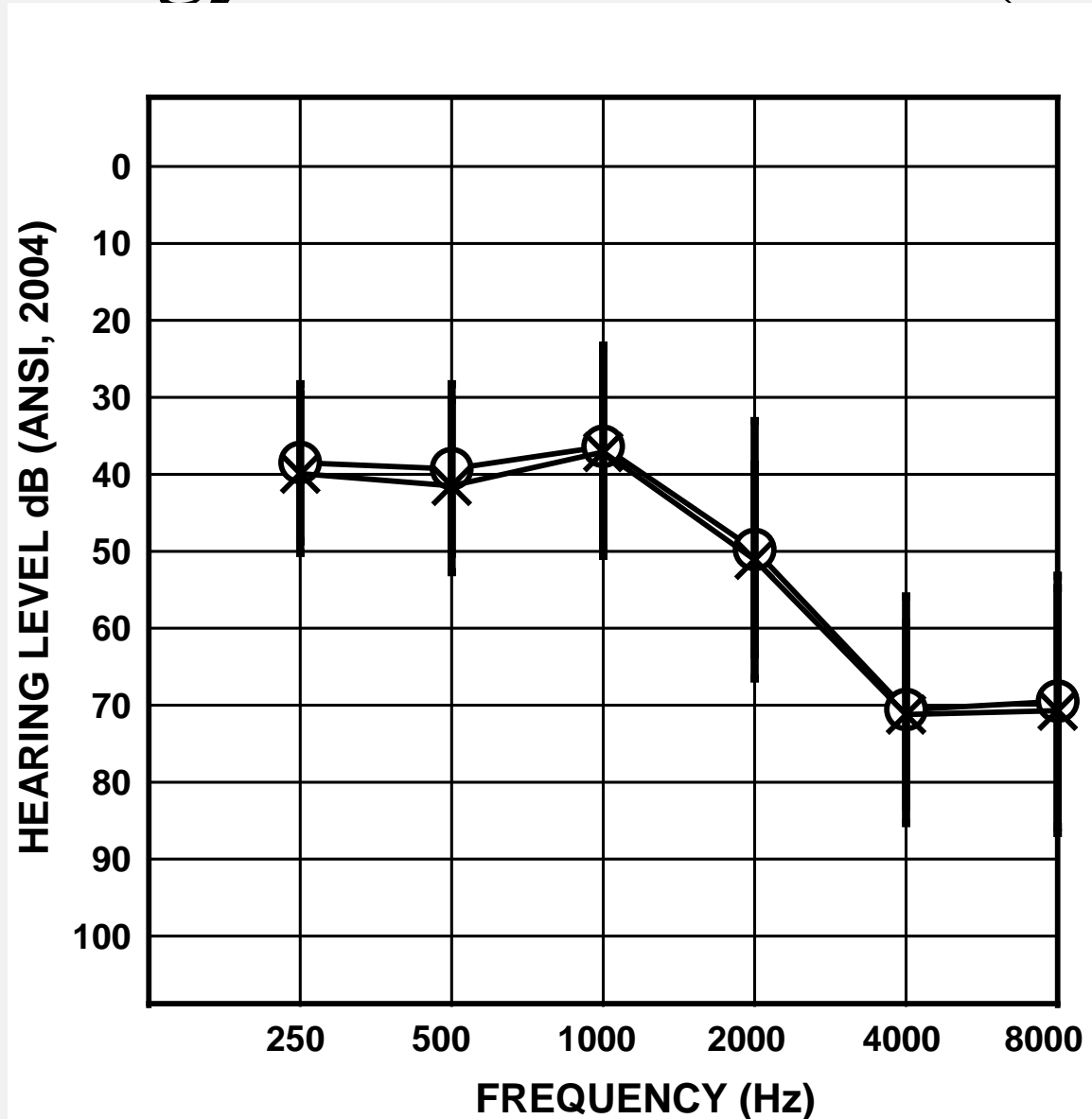
# Problems Arising: Patient Numbers

- Patient flow
  - Difficult to predict numbers and timing
    - Student and faculty volunteers recruited in order to manage a patient load of approximately 5/hour, however the range is more difficult to address
  - Friday mornings, after the first year, were busiest
    - Patients indicating they were referred by local providers, and told to arrive as early as possible
    - Triage area busiest at that time; essential that triage nurses are aware of all medical services

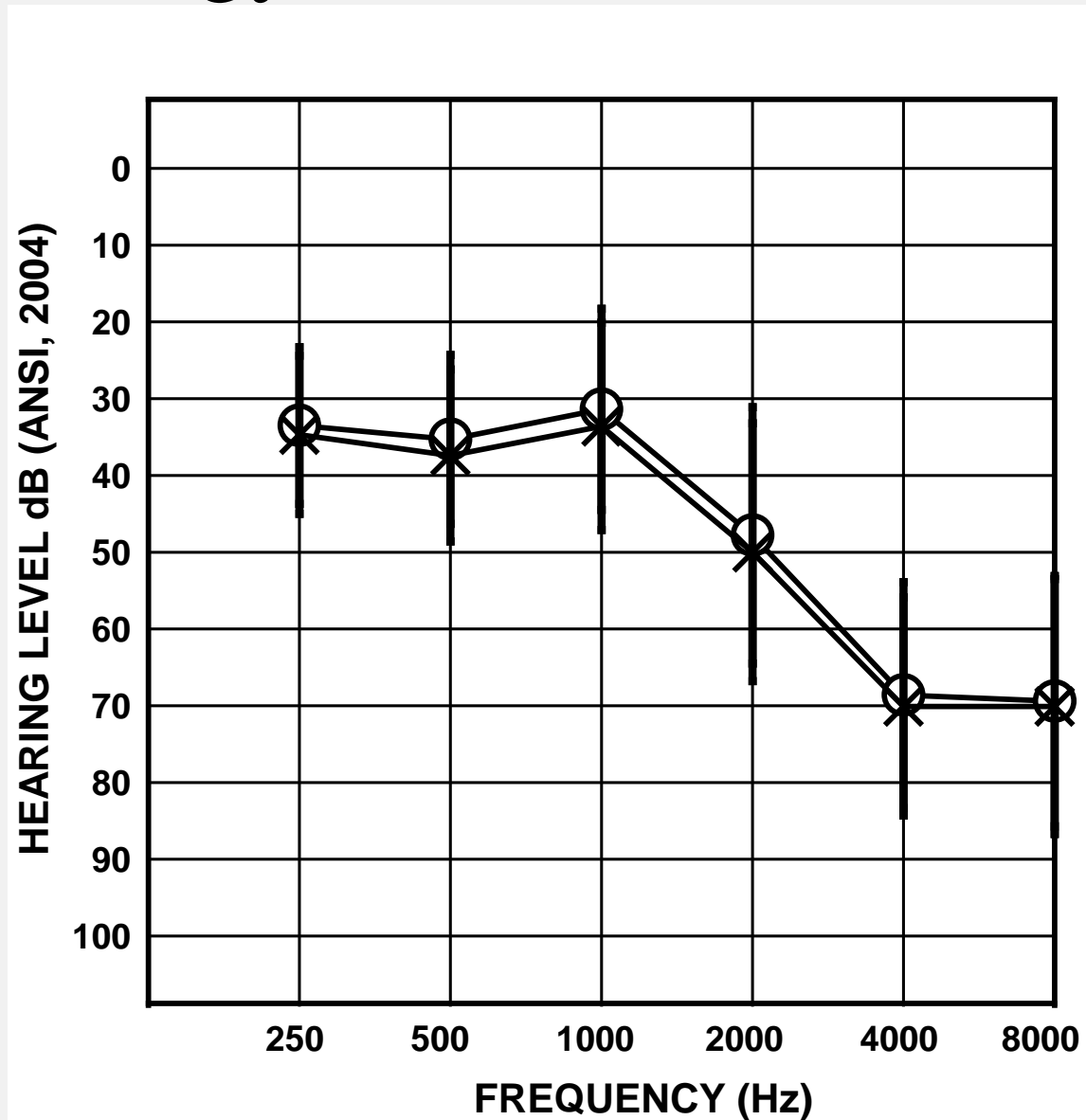
# Hearing Services at RAM (2010-2013)



# Audiology Patients at RAM (2010-2)



# Audiology Patients at RAM (2013)

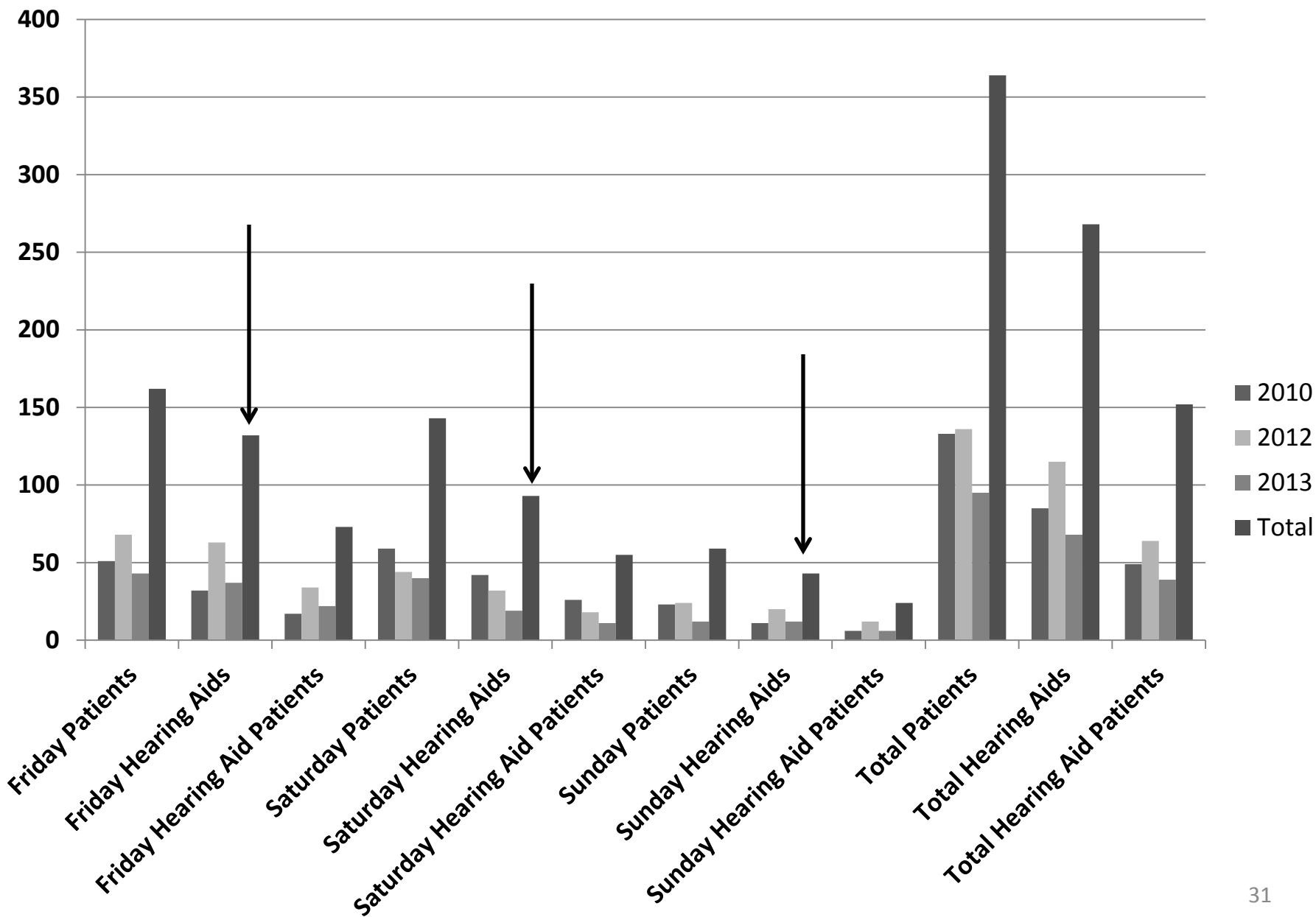


# Criteria for Hearing Aid Candidacy

- Two primary considerations
  - Audiogram: PTA of worse than 40 dBHL; PTA recorded from frequencies 500, 1000, 2000 Hz
    - Options discussed w/ borderline candidates, and most who expressed desire to receive aid(s) accommodated
  - Patient reports and resources
    - Some patients unwilling to try hearing aids
    - Others concerned about the cost (\$32./pair of aids and earmolds)
    - Concerned about the time it would take to complete fitting



# Hearing Services at RAM (2010-2013)



# Hearing Aid Fitting at F/U

- Hearing aids
  - Phonak OK Plus BTEs provided through Hear the World Foundation/Hear the World Global
  - Three different types (Power (UP), Standard (SP), Mild)
  - Devices have four screw-set frequency responses
    - Allows for flexibility during fitting without requiring cables, etc. Simple units to manipulate, excellent for training students to compare freq. resp. curves to audiogram
    - SPs the most versatile (could fit close to 90% of the pts w/ these if necessary)

# Hearing Aid Fitting at F/U

- Fitting Appointment
  - Earmold fit checked
  - Aids selected based on audio, coupled to previously-obtained earmold
  - Verifit system used to establish and determine match to target values (NAL-NL1)
  - Speechmapping completed at three levels (50, 65, 75 dB); MPO set
  - Individual orientation session (a few fittings covered more than one family member, in such cases a group orientation was conducted)
  - 30 mins. set as appt. time for f/u (more time needed about 50% of the time for a first-time user)
  - Pts provided info re: additional f/u if necessary, however no f/u scheduled after fitting

# Audiology Patients and Hearing Aid Fitting f/u at RAM



# Audiology Patients and f/u at RAM (2010-2013)

Year	Total Patients	Total Hearing Aid Patients	% Hrg aid Candidates	Total Hearing Aids
2010	133	49	37%	85
2012	136	64	47%	115
2013	95	39	41%	68
Total:	364	152	42%	268

Year	Total Students	Patient Contacts	No-Shows	Aids Fit
2010	13	37	12	67
2012	13	58	6	104
2013	11	19	20*	35
Total:	37	114	38	206

\* Note that the 2013 no-show number included individuals we could not contact for f/u due to changes in phone number, etc.

# Applications/Grants for Hearing Aids

- Hear the World Foundation
  - Provided devices in 2010 and 2012 (grant app. not necessary)
- Hear the World Global (2013)
  - Required grant application to be completed
  - Required long-term and short-term plans:
    - Requested one-year supply with a plan for expanding the program in the future
    - Long-term planning focused on expanding the services in the future to other sites served by RAM

# Partnerships

- Hearing Aids and related items
  - Grant application for Hear the World Global
  - Earmolds for BTE fittings from Emtec (Roanoke, VA) at reduced rate (\$12./mold in 2010; \$15 in 2012; \$16 in 2013)
  - Batteries provided by Hear the World
  - Augmented in 2013 by Rayovac (asked the question during a routine ordering)
  - ETSU committed funds to provide the disposables, and the use of all equipment

# Summary

- Participation supports:
  - Students' access to diverse population
  - Spirit of volunteerism; SAA/NSSLHA philanthropy
  - Managing less than optimal test environments
  - Interprofessional training opportunities
  - Follow-up care requirements/implementation
  - Collaborating with industry partners to obtain equipment and supplies for philanthropic work
  - Opportunity to inform media and public of the department's contribution to the community/region





# Students' 'mini-mission'

■ Several from ETSU programs to head to Wise, Va., for RAM event.

By **REX BARBER**  
Press Staff Writer  
rbarber@johnsoncitypress.com

Being able to care for those who desperately need assistance is the biggest reason Chris Silver got into nursing.

Silver is in the second-degree accelerated nursing program at East Tennessee State University. Today, she will be in Wise, Va., assisting in the annual Remote Area Medical event. RAM events set up around the nation to offer dental, vision, surgical and other medical services to the uninsured or underinsured.

"It's huge," Silver said of the event. "People come from all over and they stand in line for a long time. And as students we can facilitate that, you know, help them get to what they need and help them get to whichever doctor they need to see, that kind of thing."

Silver was a special education teacher for years and wanted to pursue nursing because she commonly dealt with children who had health issues.

She is one of 18 ETSU nursing students who plan to attend the Wise RAM event, which is the largest in this area.

Six ETSU doctor of audiology



Rex Barber/Johnson City

Pictured are some of the 18 nursing students who will go to the Rural Area Medical event in Wise, Va., this weekend, along with nurse and ETSU nursing school skills lab coordinator Vicki Gregg. Others from ETSU will also go to Wise.

students will attend the Wise event, too, to assist in testing. The students will return in November for follow-up appointments to help fit patients for hearing aids if needed.

Silver will go today for a 12-hour shift.

"I'm really excited about it because this is the kind of thing I wanted to get into when I came into the program," Silver said.

Vicki Gregg, a nurse and skills lab coordinator in the ETSU College of Nursing, is the administrator going with the students.

Gregg went to the RAM event in Wise last year and got "hooked" on the events, she said.

The RAM event this weekend will be her fourth such experi-

ence.

Rural areas of Appalachia have large populations of underinsured or uninsured people, many of whom rely on RAM events for their health care. Gregg said about 6,000 people showed up at the Wise event last year.

This year, estimates are that 20 percent more people seeking medical services could arrive at the fairgrounds in Wise, where the medical stations are located.

"I know last summer there was actually people that drove from Florida," Gregg said. "People will travel distances. And they camp out for the weekend."

Gregg said it is good for students to be exposed to communities that need help.

"My goal hopefully is to be part of the curriculum," Gregg said of RAM events.

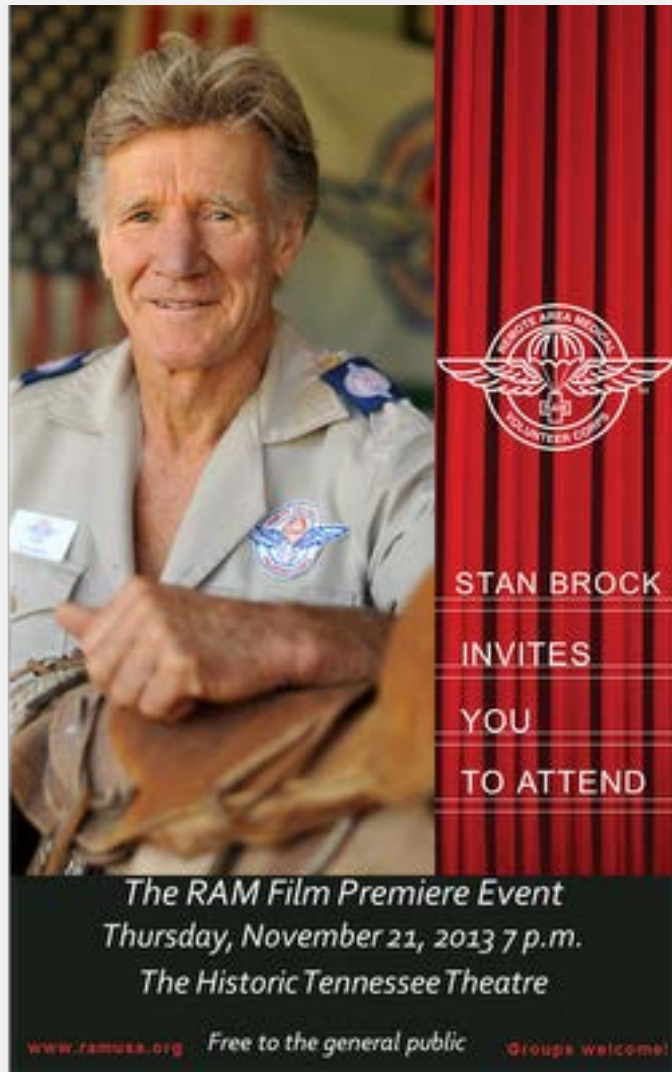
Laura Anne Mitcham began nursing 26 years ago. She entered the four-year nursing program at ETSU two years ago and to finish in May. She will be in Wise this weekend.

"My children go on mini-trips every year but since I can't be here in school I can't, so this kind of be an opportunity for me to go on a little mini-mission up in Wise," Mitcham said.

The Wise event is not arranged by ETSU. However, RAM events in Unicoi County and Bristol rely heavily on ETSU's medical community are planned for this year.







Thanks to:

Hear the World Foundation/  
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Earl Johnson

Kelly Koder-Carr

Stephanie Byrd

Amber Pearson

Jennifer Robinson

Patricia Chase

Fredia Helbert (Wise)

Shannon Bramlette (Wise)

Kelly Dixon (Wise)

Tiffany Hammonds (Wise)

Kerry Proctor-Williams (SLP)

Chaya Nanjundeswaran (SLP)

Vijay Guntupalli (SLP)

Teresa Boggs (SLP)

Marie Johnson