

BHI physician program found to increase use of hearing healthcare

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The Better Hearing Institute (BHI) is a not-for-profit 501(c)(3) organization whose primary mission is to educate the public and medical communities about hearing loss and its treatment and prevention, and to improve access by people with hearing loss to hearing healthcare services.

For people with hearing loss, the physician plays an instrumental role in leading them to seek a solution to their disability. In fact, Marke-Trak research reached the following key conclusions to illustrate this point:

(1) If people with a hearing loss are given a positive recommendation by their physician, they are five times more likely to seek a hearing solution than if the physician gives a negative recommendation.^{1,2}

(2) Medical doctors tend to give four times as many negative recommendations for hearing aids as they do positive.¹

(3) Sixty percent of current hearing aid users would even view their physician as a reliable source in choosing a brand of hearing aid.

Few hearing healthcare providers would disagree that educating physicians better could be an effective strategy for motivating people with hearing loss to seek out a solution from an appropriate hearing healthcare provider.

To elevate the critical importance of achieving better hearing in this country, it is essential to enlighten physicians on the consequences of untreated hearing loss and to work to change their attitudes toward identification and treatment of hearing loss.

To this end, BHI developed a physician referral development pro-

gram (PRDP) in 2001 for hearing healthcare providers. Currently, nearly 2000 hearing healthcare practices have enrolled in this specialized program for study and training to educate members of the medical community about hearing loss and its treatment. Materials include a CME-accredited course on CD-ROM for physicians, physician assistants, and nurses, as well as four relevant articles: "The efficacy of treating hearing loss with hearing aids,"⁴ "The impact of hearing aids on quality of life,"⁵ and two current articles on the physician's role in identification of hearing loss and the need for referral.^{6,7}

Subjective surveys with PRDP participants in 2003 demonstrated significant increases in physician awareness as measured by referrals and new users of hearing aids. The study described here was conducted to validate objectively the impact of the BHI program on

consumers seeking a solution for their hearing loss.

METHOD

An electronic directory of hearing healthcare providers was secured from InfoUSA, a direct-mail firm in Naperville, IL, and participants in the PRDP were coded into the file. Next, metropolitan statistical areas (MSA) were identified that met two specific criteria: (1) They had at least 10 hearing healthcare retail outlets, and (2) at least 20% of the local hearing healthcare providers were participants in BHI's physician referral program. Forty metropolitan statistical areas in the United States met these two criteria, and are listed in Table 1.

From these 40 metropolitan areas, 392 hearing healthcare practices participating in the BHI physician referral program and 392 control (non-participating) practices were chosen. Where possible, the control practices were ran-

Albuquerque, NM	Little Rock-N Little Rock, AR
Asheville, NC	Los Angeles-Long Beach, CA
Atlantic-Cape May, NJ	Macon, GA
Barnstable-Yarmouth, MA	Mansfield, OH
Beaufort SC-County	Medford-Ashland, OR
Benton Harbor, MI	Modesto, CA
Boise City, ID	Portland-Vancouver, OR-WA
Boston, MA-NH	Providence-Fall River, RI-MA
Charlotte-Gastonia, NC-SC	Punta Gorda, FL
Chicago, IL	Redding, CA
Citrus FL-County	Riverside-San Bernardino, CA
Denver, CO	Saginaw-Bay City-Midland, MI
Deschutes OR-County	San Antonio, TX
El Paso, TX	San Diego, CA
Eugene-Springfield, OR	Santa Cruz-Watsonville, CA
Fayetteville-Springdale, AR	South Bend, IN
Fort Myers-Cape Coral, FL	Stockton-Lodi, CA
Fresno, CA	Tucson, AZ
Grand Junction, CO	Vallejo-Fairfield-Napa, CA
Johnstown, PA	Yakima, WA

Table 1. Metropolitan statistical areas studied.

domly chosen from among practices located in or close to the same ZIP codes as the PRDP participants as a means of achieving comparable samples.

If the PRDP was effective, then the study would be expected to find an increase in preliminary screening for hearing loss in physician practices, such as pure-tone otoscope screening, the finger rub test, paper-and-pencil test, tuning fork, et al. Such increased screening would then lead to increases in referrals to hearing healthcare providers, objective audiologic testing, and identification of hearing aid candidacy.

A proxy for the measurement of the preceding is incremental hearing aid sales, the treatment of choice for people diagnosed with hearing loss. Hearing aid sales were collected from each participating manufacturer for the 784 practices in this study. Conceivably, hearing aid sales could have remained unchanged while physician referrals increased. However, capturing physician referrals over a 36-month period from nearly 800 practices would have been far more complex logistically than obtaining the net hearing aid sales from the manufacturers (both Hearing Industries Association members and non-members) that participated in this study.

An Excel template was sent to each participating manufacturer for securing the monthly net hearing aid sales for the calendar years 2001-2003. This study was blinded to those collecting the information for BHI so they did not know whether or not any particular practice was participating in the BHI program.

The data were compiled at the practice level. Practices with excessive missing information, inability to separate bill-to and ship-to locations, inconsistencies in the data due to possible confusions with changes in mailing addresses or practice names, or extremely low annualized monthly hearing aid sales in any of the years studied (e.g., <4 hearing aids) were excluded from the study.

After these exclusions, the final sample sizes were achieved: 264 PRDP participants (99 of which were in the BHI program less than a year and the remainder more than a year) and 201 control practices. Since net increases in sales were used as the proxy for determining the efficacy of the physician referral program, the quarterly mean monthly hearing aid sales in the years 2002-2003, as well as sample sizes, are shown in Table 2 both for PRDP participants and for controls.

captured for each practice (2001 monthly hearing aid sales). To control for possible effects of structural growth due to economic or market conditions independent of the BHI program, a time variable was added to the resulting model in quarterly increments for 2002-2003, (e.g., quarters were dummy coded).

Finally, participation in the BHI program was coded into three categories: (1) non-participation, (2) participation of <1 year, and (3) participation of ≥1 year. Thus, the overall statistical model could be viewed as follows: Hearing aid sales are a function of: (1) baseline sales, (2) structural growth of the industry, and (3) participation in the BHI program. The model was developed using standard linear regression procedures found in any statistical package. In this study, SAS (Statistical Analysis System) was used.

Time	Means		Sample Size		Mean diff.
	PRDP	Control	PRDP	Control	
Q1-02	13.6	19.3	8	1,368	-5.7
Q2-02	17.3	20.0	121	1,249	-2.7
Q3-02	17.9	20.7	308	1,061	-2.8
Q4-02	17.3	19.1	393	975	-1.8
Q1-03	19.5	18.5	554	816	1
Q2-03	22.3	19.1	687	679	3.2
Q3-03	23.8	18.3	756	615	3.9
Q4-03	21.4	18.2	763	595	3.2

Table 2. Mean hearing aid sales and sample sizes comparing participants in the BHI physician referral development program (PRDP) with controls.

In total, nearly 11,000 months of sales data were analyzed to isolate the impact that the BHI physician referral program had on patients seeking a hearing solution for their hearing loss. To control for possible differences in size of practice, the baseline sales prior to the BHI physician program were

RESULTS

The statistical model is documented in Table 3. It can be seen that the general model of one times (1x) baseline (2001) sales + 1.82 hearing aids with adjustments for certain quarters ranging from a low of -1.25 hearing aids in Q4-2002 and a high of +2.29 hearing aids in Q3-2003

Variable	Beta Weight	Significance level (<p)
Intercept	1.82	0.0001
Baseline sales	1	0.0001
Q4-2002	-1.25	0.0018
Q1-2003	-0.89	0.0245
Q2-2003	0.84	0.0368
Q3-2003	2.29	0.0001
PRDP<12	0.5	0.1482
PRDP>=12	0.91	0.0015

Table 3. Predictive model of hearing aid sales showing the value of participation in the BHI physician referral program.

results in a reasonable forecast of individual monthly retail performance (with the latter figure reflecting an adjustment for the economic recovery in the second half of 2003).

Participants in the BHI physician program for less than 1 year achieved an additional +0.50 hearing aids a month, while participants for more than 1 year achieved an additional 0.91 units. The finding for the less-than-1-year participant is being accepted by this researcher, although it is only at the 85% confidence level. It is believed that the confidence level is due to the small sample size (n=99) for newer participants. Simply increasing the sample size by 60 participants (making it equivalent to the longer-term participants) would have increased their hearing aid sales contribution to +0.71 hearing aids per month at a 97% confidence level. The above model explained 56% of variance in sales. The probability of the incremental hearing aid sales (+0.91 per month or 11 per year) for the mature participant sample (n=163) occurring due to chance is one-in-1000 studies of a similar nature.

CONCLUSIONS

The BHI physician referral program is forecast to result in higher physician referrals and greater utilization of hearing loss solutions, evidenced by its impact on retail sales of hearing aids. With 1729 hearing healthcare practices participating as of December 2003, the program is projected to improve access to hearing loss solutions, generating sales of more than 15,000 additional hearing aids in 2004.

At an average retail price of \$1810,⁸ the referral program will result in additional retail revenue of \$29 million, or about \$17,000 for each participating practice. This equates to average growth of about 5% at a time when use of hearing healthcare services declined (-0.3% in the private market for 2001-2003). We would expect that the more assertive practitioner—one who meets with physicians in person versus mailing BHI materials to them—would receive significantly more patients from referring physicians. Anecdotally, we have learned that some hearing healthcare practices are receiving referrals from as many as 60 medical doctors.

This scientific market study objectively determined that direct efforts by hearing healthcare providers to educate physicians regarding hearing impairment, using a tested method with credible educational material, result in more physician referrals and increased access to hearing loss solutions, as evidenced by increased sales of hearing aids.

We urge all hearing healthcare practitioners to enroll in the BHI physician referral program at www.betterhearing.org as a means of better serving people with hearing loss. If you have enrolled in the BHI program but not yet reached out to educate physicians in your community, now is the time to act. (H)

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