**American University of Armenia**
*Center for Health Services Research and Development*

*Nork Marash Medical Center*

# ASSESSING THE IMPACT OF THE AUA/NMMC MARKETING PROJECT ON NAME RECOGNITION AMONG YEREVAN RESIDENTS

**Lusine Abrahamyan, MD, MPH**
**Zaruhi Bakalyan, MD, MPH**
**Anahit Demirchyan, MD, MPH**
**Michael E. Thompson, MS, DrPH**

**Yerevan, 2004**

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**Executive summary**

**Introduction.** This study is a follow-up survey of the baseline research conducted in November 2000 by the AUA Center for Business Research and Development (CBRD) to measure the name recognition of Nork Marash Medical Center (NMMC) among Yerevan residents. The current study was intended to measure the changes in the name recognition of NMMC happened since the implementation of the AUA/NMMC Marketing Project. The latter functioned during 2001-2003 and implemented a considerable portion of recommendations made by CBRD on increasing marketing effectiveness at NMMC.

**Methods.** The study utilized randomized pre, post-test evaluation survey design without a comparison group. Random digit dialing was used to contact participants. The survey was anonymous and oral consent was taken before beginning interviews. The study population consisted of people aged 18 years or older living in Yerevan (n=166).

**Results.** Women constituted 76.5% of the respondents. The mean age of participants was 40.6 years. The study revealed significant increase in the name recognition of NMMC (from 6.2% in 2000 to 17.2% in 2004). However, the highest proportion of people (21.7%) named Scientific Research Institute of Cardiology as the place they would choose in case of heart trouble. The distribution of data on the main sources of information about hospitals was significantly different between the surveys. In 2004, less people received information from 'friends/relatives' and 'doctors' and more from 'TV/radio/newspapers' and 'former patients' than in 2000. The influence of spouses, other family members, and doctors' in selecting a hospital decreased. The percentage of people who rely on their own decision increased twofold. Other factors considered as important in the process of hospital selection were the quality of care (39.6%), affordability of services (31.1%), and doctors' professionalism (24.4%). About one-third of the respondents suggested improving healthcare services in Armenia by making them affordable, especially for vulnerable groups.

**Conclusion and recommendations.** Overall, marketing project was successful: almost threefold increase in name recognition was observed. The following actions are suggested to further enhance the name recognition of NMMC and simultaneously improve the quality of care there:

- Continue advertising the hospital periodically through mass media;
- Organize periodic seminars/conferences at the NMMC for specialists and publicize these events;
- Assume responsibility for continuing the activities initiated by the marketing project;
- Summarize the data gathered through the discharge questionnaire twice a year and use the results to improve the quality of care provided at NMMC.

## 1. Introduction

In November 2000, the Center for Business Research and Development (CBRD) at the American University of Armenia (AUA) conducted a multi-phase research project to address the situation of marketing at NMMC, and the latter's name recognition among Yerevan residents. The research was aimed to find alternative ways for improving marketing at NMMC (1). The research included in-depth interviews with NMMC administration and employees; focus group sessions held with NMMC doctors, nurses and patients, and telephone interviews with potential consumers living in Yerevan (n=275). One of the striking results of the latter was that "the name recognition of NMMC is nowhere near as high as is considered by the NMMC personnel" (1). Out of 275 respondents of telephone survey only 17(6.2%) mentioned that they would go to NMMC if they have heart trouble.

Based on this research, numerous short, medium and long run recommendations toward improving marketing at NMMC were made and implemented between 2001 and 2003 in the scope of AUA/NMMC Marketing Project (1). During this period the following activities were completed:

- The Mission Statement and Organizational Chart of NMMC were created.
- NMMC was widely advertised through different mass media: radio-spot broadcasting on "Khit-FM" radio-channel, Armenian National radio channel, and Russian Radio channel both in Armenia and Southern Russia; three-month period advertisement through the inter-NIS newspaper of Diaspora Armenians "Noev Kovcheg".
- Series of health educational and informational articles were periodically published in "Azg" newspaper under the heading of NMMC.
- All significant events at NMMC (conferences, "open-door" events, press-conferences, cardiology and arrythmology workshops/seminars, etc) were widely publicized through mass media activities.
- A marketing brochure introducing NMMC was developed in two languages (English and Russian) and is currently being published.
- Patient satisfaction surveys (both qualitative and quantitative) were periodically conducted at NMMC aimed to find areas needing improvement.
- A monitoring system was introduced to follow the referrals of patients from NIS countries through a structured questionnaire.
- A discharge questionnaire and information package to be given to inpatients at admission were developed.
- Six brochures addressing different areas of patient education on cardiac care were published (500-1000 copies of each) and are currently available at NMMC for patients.
- Overall, 11 cardiologists from different NIS countries passed 4-month internship program at NMMC.

The study evaluated the impact of the marketing subproject on improving the name recognition of NMMC.

## 2. Methods

### 2.1. Study design

The study utilized a randomized pre/post-test evaluation survey design without a comparison group. The baseline survey was conducted in November 2000, after which the marketing subproject was launched. The follow-up survey was conducted in March 2004 after completion of the subproject in December 2003.

### 2.2. Study protocol

For the baseline survey, the study team divided Yerevan into 6 sub-districts and interviewed 50 people per sub-district on average. For the follow-up, due to the current geographic division of the city, the total sample size was divided between the existing 12 districts ("hamaynks") of the city proportionate to the number of population in each according to the last census (2001). "Armentel" Company provided the first two digits of telephone numbers operating in each district. The final 6-digit telephone numbers were created using the given first two digits and adding randomly generated digits. Two ANP team members conducted the interviews. The survey was anonymous and oral consent was obtained before the beginning of interviews. To avoid possible bias, the interviewers did not mention that NMMC was interested in the survey. Furthermore, the first question of the survey was about selection of a health care facility for a problem unrelated to cardiology.

### 2.3. Study instrument

The baseline questionnaire contained 8 questions, mainly open-ended (Appendix 1). The follow-up survey instrument also contained 8 questions but with minor differences (Appendix 2).

### 2.4. Study population

The study population consisted of Yerevan residents aged 18 years or older. The sample size was calculated by STATA 7.0 statistical software using the formula for one sample comparison of proportion to a hypothesized value. It was hypothesized that after the Marketing Subproject implementation, the proportion of people who would choose NMMC in the case of having heart trouble would double. Considering the result from the previous survey (6.2% of participants mentioned NMMC as a referral place in case of heart trouble), the present hypothesis of 12% prevalence, desirable 80% power and alpha error of 0.05, resulted in a sample size of 166 (Appendix 4).

## 3. Ethical considerations

Oral consent was obtained from all participants before the interview. The interviewers introduced themselves as AUA employees. The respondents had options to refuse to participate, to stop the interview at any time, or to omit any question perceived as sensitive. The interviews were anonymous. Furthermore, the telephone numbers were not recorded.

## 4. Results

The data was entered in SPSS 11.0 statistical software. Single data entry was performed. Only range checks were used to assure accuracy of the entered data. Both SPSS 11.0 and STATA 7.0 statistical packages were used for the data analyses.

### 4.1. Demographic characteristics

Overall, 166 people participated in the follow-up survey. Women constituted 76.5% of the respondents (n=126). In the pretest survey they accounted for 70% of the surveyed population (Table 1). There was no statistically significant difference between two surveys with respect to gender distribution (p=0.14).

**Table 1. Gender distribution**

| Gender | Baseline Survey (n=275) | Follow-up Survey (n=166) |
|---|---|---|
| Male (%) | 30 | 23.5 |
| Female (%) | 70 | 76.5 |

The mean age of participants enrolled in the follow-up survey was 40.6 years (sd=15.8) with a range varying from 18 to 76 years.

### 4.2. Hospital selection in the case of hearth trouble

In order to distract respondents' attention from a particular health problem or health care institution, the first question of the interview was related to a health care facility selection in case of a neurological problem. The answers to this question were not analyzed. The next question was about the choice of a health care facility in case of a hearth trouble. A wide variety of facilities were named. The distribution of answers differed from the baseline survey (Table 2). Unfortunately, only the data on two the most frequently mentioned hospitals ("Mikaelyan" Surgical Institute and "Erebuni" Medical Center), as well as the data for NMMC were available from the baseline survey, which limited ability to make a complete comparison.

**Table 2. Place of referral in the case of having hearth trouble**

| Health care facility | Baseline Survey (n=275) | Follow-up Survey (n=166) |
|---|---|---|
| Scientific Research Institute of Cardiology | N/A | 21.7% (n=36) |
| NMMC* | 6.2% (n=17) | 17.5% (n=29) |
| Polyclinic | N/A | 16.3% (n=27) |
| "Armenia" medical center | N/A | 7.8% (n=13) |
| "Erebuni" medical center | 10.5% (n=29) | 6.6% (n=11) |
| Will not refer anywhere | N/A | 6.0% (n=10) |
| "Mikaelyan" Surgical Institute** | 22.2% (n=61) | 3.0% (n=5) |

*N/A - data is not available*
** Highly statistically significant difference between the surveys (p<0.001)*
*** Highly statistically significant difference between the surveys (p< 0.0001)*

Z-test result showed highly significant difference between the respondents' choices for NMMC. At the baseline survey only 6.2% of the respondents named NMMC as a hospital they would refer in a case of heart trouble, while at the follow-up this name was mentioned by 17.5% of the respondents (p 0.0002). The findings failed to reject the stated hypothesis to find at least 5.8% (12%-6.2%) absolute difference between the baseline and follow-up surveys. The absolute difference was 11.3%, meaning relative increase of the name recognition of NMMC by 182% in 2004 compared to that in 2000.

Highly significant difference was observed also for the selection of "Mikaleyan" Surgical institute with a lower percentage received from the follow-up survey ($p<0.0001$). The proportion (21.7%) of respondents naming Scientific Research Institute of Cardiology as a place they would refer in a case of heart trouble was surprisingly high. Although there was no available baseline data for this hospital choice, it was at least less than 10.5%, as this institution was not mentioned among the two most frequently mentioned referral sites at the baseline survey. Using these data as a possible maximum percentage for the selection of this institution in 2000, the difference between the survey results was highly significant ($p=0.001$) with higher rates at the follow-up survey.

### 4.3. Sources of information about different hospitals

Possible sources of information about various hospitals were explored among respondents. Only the source named first by a respondent was included in the analysis (Table 3).

**Table 3. Sources of information (named first)**

| Sources of information | Baseline Survey (%) (n=275) | Follow-up Survey (%) (n=159)* |
|---|---|---|
| Friends/relatives | 52.7 | 37.7‡ |
| Doctors | 18.6 | 11.3† |
| TV/radio/newspaper | 17.6 | 21.4 |
| Former patients | 9.6 | 16.4† |
| D/N | 1.5 | 1.2 |
| Other | 0 | 12.0‡ |
| **Total** | **100** | **100** |

**Cases containing missing values were excluded*
*‡ Statistically significant difference between baseline and follow-up surveys, p<0.005*
*† Statistically significant difference between baseline and follow-up surveys, p<0.05*

The distribution of data across sources was different between the two surveys (the p-value of Pearson chi2 test was statistically highly significant: 0.000). 'Friends/relatives' remained as the main source of information in both surveys though the proportion of those who received information from this source was higher in 2000 than in 2004 (52.7% versus 37.7%). The proportion of people who mentioned doctors as the main source of information decreased as well (11.3% versus 18.6%). At the follow-up, 16.4% of the respondents named 'former patients' as a primary source of information on hospitals, which was much higher than that at the baseline survey (9.6%).

In many cases, respondents named more than one source of information. Table 4 illustrates the frequency of naming each information source in general and by those who named NMMC as the preferred place for referral.

**Table 4. Follow-up survey: Sources of information (all named)**

| Sources of information | All respondents (%) (n=161)* | Respondents selected NMMC (%) (n=29) |
|---|---|---|
| Friends/relatives | 50.3 | 13.8 |
| Doctors | 14.9 | 58.6 |
| TV/radio/newspaper | 26.1 | 20.7 |
| Former patients | 23.0 | 44.8 |
| Other | 14.9 | 10.3 |

**The cases containing missing values were excluded*

The distribution of all named sources was almost the same as that for the sources named first. However, this was not the case for the patients who selected NMMC. For the latter, the highest prevalence as information sources had 'doctors' (58.6%), followed by 'former patients' (44.8%) and 'mass media information sources' (20.7%).

### 4.4. People influencing hospital selection

The next question given to the respondents aimed to identify those people whose influence was important for respondents when selecting a hospital to refer. Table 5 summarizes the data on people named first.

**Table 5. People influencing the choice of hospital (named first)**

| Groups of people | Baseline Survey (%) (n=275) | Follow-up Survey (%) (n=155)* |
|---|---|---|
| Spouse/other family member | 44 | 25.1 |
| My doctor | 34 | 22.6 |
| Friends/neighbors | 14 | 12.3 |
| Own decision | 8 | 20.0 |
| Other | 0 | 20.0 |

**Cases containing missing values were excluded*

The follow-up survey revealed a distribution of answers significantly different from the baseline survey ($p < 0.001$). The influence of spouses or other family members was the highest in both surveys but notably lower at the follow-up survey (44% versus 25.1%). The role of doctors decreased as well (34% versus 22.6%). The percentage of people who rely on their own decision was more than 2 times higher at the follow-up (20% versus 8%).

Most participants named more than one person who would influence their decision in hospital selection. For more comprehensive judgment, a separate analysis was done to show overall influence of different groups of people for the whole sample and for those preferring NMMC (Table 6).

**Table 6. Follow-up survey: People influencing the choice of hospital (all named)**

| Groups of people | All respondents (%) (n=160)* | Those selected NMMC (%) (n=29) |
|---|---|---|
| Spouse/other family member | 28.1 | 24.1 |
| My doctor | 24.4 | 20.7 |
| Friends/neighbors | 16.9 | 17.2 |
| Own decision | 20.0 | 27.6 |
| Other | 19.4 | 24.1 |

**Cases containing missing values were excluded*

Different groups of people who have influence on the hospital selection process were almost similarly distributed in the whole group and in the group of respondents who gave the priority to NMMC.

### 4.5. Other important factors for hospital selection

An open-ended question was asked to reveal other factors considered important in the process of hospital selection. The frequently mentioned factors are presented in Table 7. The highest proportion of participants (n=65 or 39.6%) mentioned the quality of care. This was one of the interesting findings of the follow-up survey. At the baseline survey, doctors' professionalism had the highest frequency (33.3%). The latter factor was the third by frequency at the follow-up (24.1%). The second important factor at the follow-up was affordability of services (31.1%).

**Table 7. Important factors for hospital selection**

| Factors | Frequency* |
|---|---|
| Quality of care | 39.6% (n=65) |
| Affordability of services | 31.1% (n=50) |
| Professionalism of doctors | 24.4% (n=40) |
| Providers' attitude and communication skills | 13.4% (n=22) |
| Hygienic conditions of the hospital | 11.0% (n=18) |
| Known person in staff | 8.5% (n=14) |
| Convenient location | 6.1% (n=10) |

** Cases containing missing values were excluded*

Other important factors were the attitude and communication skills of providers including their kindness, humanism and attentiveness toward patients, as well as hygienic conditions of the hospital, known person in the hospital staff, convenient location of the hospital, former experience/visits, quality of equipment, etc.

### 4.6. Suggestions to improve health care system in Armenia

In response to the last question, the respondents provided suggestions to improve the health care system in Armenia. Most frequently (24.7%), respondents mentioned the need to make health care services affordable, especially for vulnerable groups: elderly, children and people with low income. About one-third of the respondents linked improving the services with decreasing their cost. Other suggestions (presented in a sequence relative to the frequency of being mentioned) were:

- Training doctors and improving medical students' education
- Increasing the salary of medical staff (to eradicate under-table payments)
- Improving the quality of care in general and for different services such as laboratory, emergency service, etc.
- Introducing medical insurance system
- Eliminating under-table payments
- Making medical education free of charge
- Providing more opportunities to young specialists
- Improving the hygienic conditions in hospitals

## 5. Discussion

The study investigated the impact of the marketing subproject launched in October 2001 in terms of changes in name recognition of NMMC. Name recognition was assessed by the respondents' preferred selection of a health care facility in case of any hearth trouble. Overall, the project was successful. The follow-up survey revealed a significant, almost three-fold increase in name recognition of the center (from 6.2% to 17.5%). The name recognition of NMMC among Yerevan residents was the second highest after the Scientific Research Institute of Cardiology.

Between the surveys, the percentages of people who would select "Mikaelyan" Surgical Institute or "Erebuni" medical center in case of a hearth trouble decreased. Both hospitals have cardiological departments but it seems that people with specific health problems prefer to visit more specialized centers, such as Scientific Research Institute of Cardiology or NMMC. The finding that the largest proportion of people selected Scientific Research Institute of Cardiology as a place of referral was an unexpected and surprising result. Although this center does not provide cardiac surgical services, there is a possibility that in further development it could become a potential competitor in that field also. This institution is older than NMMC being recognized from the Soviet times and is an educational setting for many medical students and residents. One of the possible explanations of this finding could be the fact that the question did not specify the type of the hearth problem (surgical or not). On the other hand, the percentage of people who selected Scientific Research Institute at the baseline survey was less than 10.5%. Although the name recognition of NMMC increased, the existence of a potential competitor in Yerevan market emphasizes the need for continuing and enhancing NMMC marketing activities.

The follow-up survey findings were significantly different from the baseline with respect to the distribution of information sources about the hospitals. In both surveys, the main sources of information were 'friends/relatives'. A positive finding was that now more people receive information from media than before, confirming that mass media is a potential source to further improve the name recognition of NMMC.

Groups of people influencing the choice of hospital were also significantly different between the baseline and follow-up surveys. In the baseline survey, 'spouses' and/or 'other family members' had the highest prevalence, followed by 'doctors', 'friends/neighbors', and 'own decision'. In the follow-up survey, this pattern was somewhat different: almost one-fifth of the respondents relied on 'own decision' while this category was only a small group in the baseline survey.

The survey revealed a change in peoples' values in assessing health care between 2000 and 2004. A shift from individual professionalism to wider quality of care happened in people's mind. Quality was not even addressed by respondents at the baseline survey while at the follow-up survey it was mentioned by almost 40% of respondents.

Almost one-third of the participants considered affordability of services as an important factor for hospital selection, which is not surprising considering the current gap between the costs of health care and the socioeconomic condition of the population in Armenia. Almost one-third of the participants suggested improving healthcare services via making those more affordable and/or free of charge, especially for vulnerable population groups. Many of the

suggestions were the same as at the baseline survey like removing under-table payments, introducing health insurance system, etc.

## 6. Conclusion and recommendations

Marketing strategies are effective means to attract people to a particular facility. ANP Marketing Subproject was comprehensive. It covered many aspects of hospital functioning and aimed to increase the name recognition of NMMC. The follow-up survey revealed significant improvement in name recognition of NMMC compared with that in 2000. Nevertheless, this outcome could be not only due to ANP marketing subproject but the summative effect of the good teamwork at NMMC, high quality of its services, and the collaboration between AUA and NMMC.

Almost all the activities of the Marketing subproject were gradually transferred to NMMC. Based on the results of the follow-up survey the following recommendations were made to further enhance the name recognition of NMMC and to improve the quality of care it provides:

- Continue advertising the hospital periodically through mass media means (TV, radio, newspapers, etc.);
- Organize periodic seminars/conferences at NMMC both for medical specialists and general population;
- Ensure sustainability of activities launched by the Marketing Subproject such as publication and distribution of informational and educational materials to patients;
- Summarize the data gathered through the discharge questionnaire twice a year and use the results to improve the quality of care provided at NMMC.

## Reference

1. American University of Armenia, Center for Business Research and Development. Report on marketing issues at the Nork Marash Medical Center, Yerevan, Armenia: American University of Armenia, November 2000

**Appendix 1. Telephone Survey Questionnaire (Baseline survey)**

- Where would you go to if you
  - Had stomach trouble?
  - Had heart trouble?
  - Were expecting a baby?

- How do you get your information about various hospitals?

- What influence do the following people have on your choice of a hospital?
  - Your doctor
  - Your spouse
  - Other family members
  - Friends/Neighbors
  - Others

- What other factors considered in the decision making process?

- Have you ever requested to be treated at a specific hospital or by a specific doctor?

- What suggestions do you have regarding improving health care and health awareness in Armenia?

**Appendix 2. Follow-up Survey Questionnaire (English)**

# Marketing Survey Questionnaire

Consent:
Hello, my name is _____. I'm from the American University of Armenia. We are doing a survey among general population related to health care services in Yerevan. Your telephone number was chosen randomly from the list of other telephone numbers of your district. I'm going to ask you some questions related to health care services. This will take from you at about 4-5 minutes. You can refuse to participate or to answer any question you feel uncomfortable. This is voluntary survey and you can stop the interview at any time you want. Do you agree to participate in the survey?

**1. Gender** ☐ Male ☐ Female

**2. What is your age? _____**

**3. Where would you go if you had any neurological disease?**

_____

**4. Where would you go if you had any heart disease?**

1. _____

2. _____

**5. How do you get your information about various hospitals?**

☐ a. My physician
☐ b. Friends/Relatives
☐ c. TV/Radio/Newspaper
☐ d. Former patients
☐ e. Other _____

**6. What people have the most influence on your choice of hospital?**

☐ a. My doctor
☐ b. My spouse
☐ c. Other family members
☐ d. Friends/Neighbors
☐ e. Others _____

**7. What are the other factors you consider important for hospital selection?**

☐ a. Affordability of services
☐ b. Quality of care
☐ c. Convenient location
☐ d. Familiarity of hospital (past referrals)
☐ e. Familiar staff (doctor, nurse) working at the hospital
☐ f. Other factors _____

**8. What suggestions do you have regarding improving health care in Armenia?**

_____

_____

**Appendix 3. Follow-up Survey Questionnaire (Armenian)**

Հարցում

Համաձայնագ իր՝ Բարև Ձեզ, ես_____ եմ Հայաստանի ամերիկյան համալսարանից: Մենք Երևանի բնակչության մեջ հարցում ենք անցկացնում առողջապահական ծառայությունների վերաբերյալ: Ձեր հեռախոսահամարը ընտրվել է պատահականորեն՝ Ձեր շրջանի այլ հեռախոսահամարների ցուցակից: Հարցումը կտևի 4-5 րոպե: Դուք կարող եք հրաժարվել մասնակցելուց, դադարեցնել հարցազրույցը, երբ ուզեք կամ բաց թողնել ցանկացած հարց, որը Ձեզ դուր չի գ ա: Համաձա՞յն եք պատասխանել հարցերին:

1. Սեռը 1.☐ Արական 2.☐ Իգ ական

2. Քանի՞ տարեկան եք _____

3. Որտե՞ղ կդիմեիք, եթե նյարդերի հետ կապված որևէ հիվանդություն ունենայիք:
_____

4. Որտե՞ղ կդիմեիք, եթե սրտային որևէ հիվանդություն ունենայիք:
1. _____
2. _____

5. Սովորաբար որտեղի՞ց եք տեղեկանում տարբեր հիվանդանոցների մասին:

☐ a. Իմ բժշկից
☐ b. Ընկերներից/բարեկամներից
☐ c. Հեռուստացույցից/Ռադիոյից/Թերթերից
☐ d. Նախկին հիվանդներից
☐ e. Այլ _____

6. Ո՞վ է ամենից շատ ազդում հիվանդանոցի Ձեր ընտրության վրա:

☐ a. Իմ բժիշկը
☐ b. Ամուսինս
☐ c. Ընտանիքի այլ անդամներ
☐ d. Ընկերներ/Հարևաններ
☐ e. Այլ _____

7. Ի՞նչ այլ գ ործոններ եք կարևոր համարում հիվանդանոց ընտրելու հարցում:

☐ a. Ծառայությունների մատչելիությունը (էժան լինելը)
☐ b. Բուժօգ նության որակը
☐ c. Հիվանդանոցի հարմար տեղակայումը
☐ d. Հիվանդանոցի ծանոթ լինելը (նախկին այցելություններից)
☐ e. Ծանոթների առկայությունը հիվանդանոցի աշխատակիցների շրջանում
☐ f. Այլ գ ործոններ _____

8. Ի՞նչ խորհուրդ կտայիք Հայաստանում բուժօգ նությունը բարելավելու համար :

_____

_____

Շնորհակալություն մասնակցության համար:

**Appendix 4. STATA output of data analyses**

**1. Sample size calculation**

```
sampsi 0.062 0.12, p(0.8) onesample
Estimated sample size for one-sample comparison of proportion to hypothesized value
Test Ho: p = 0.0620, where p is the proportion in the population
Assumptions:
        alpha =   0.0500  (two-sided)
        power =   0.8000
 alternative p =   0.1200
Estimated required sample size:
           n =  166
```

**2. Chi-square test for comparison of the information sources about hospitals between baseline and follow-up surveys**

```
. tabi 145 60 \ 51 18 \ 48 34 \ 27 26 \ 4 2 \ 0 19, chi2 exact

           |        col
       row |         1         2 |     Total
-----------+----------------------+----------
         1 |       145        60 |       205
         2 |        51        18 |        69
         3 |        48        34 |        82
         4 |        27        26 |        53
         5 |         4         2 |         6
         6 |         0        19 |        19
-----------+----------------------+----------
     Total |       275       159 |       434

          Pearson chi2(5) =  45.3365   Pr = 0.000
           Fisher's exact = 0.000
```

**3. Chi-square test for comparison of the groups of people having influence on hospital selection between baseline and follow-up surveys**

```
. tabi 94 35 \ 121 39 \ 38 19 \ 22 31 \ 0 31, chi2 exact

           |        col
       row |         1         2 |     Total
-----------+----------------------+----------
         1 |        94        35 |       129
         2 |       121        39 |       160
         3 |        38        19 |        57
         4 |        22        31 |        53
         5 |         0        31 |        31
-----------+----------------------+----------
     Total |       275       155 |       430

          Pearson chi2(4) =  80.6649   Pr = 0.000
           Fisher's exact = 0.000
```