

## **MONGOLIAN HEALTHCARE PROJECT – Community Health Screenings, Summer 2007**

### **Objective for the Community Health Screenings**

The purpose of this epidemiologic study was to acquire basic data regarding the health of residents living in rural Renchinlumbe Soum (County), Hovsgul Aimag (Province), Mongolia. These health screenings will establish a database to assess health parameters and establish future healthcare priorities of this largely nomadic population.

### **Protocol Preparation for Health Screenings in Renchinlumbe Soum in Hovsgul Aimag**

MSU biomedical students with the MSU BioRegions Program, working in cooperation with the medical personnel in the Renchinlumbe People's Hospital, reported that Dr. Purevsuren, director of the hospital, was interested in obtaining glucose and protein levels of the people living in this rural area. In response, we formulated a protocol to perform community screenings of blood pressure, glucose and urinalysis testing for individuals in both the countryside Bags (Bag is a local government unit) and the Renchinlumbe Soum Town Center (known also as Renchinlumbe).

A draft of the protocol was written by Susan Gibson after several discussions with Dr. Robert Flaherty, physician with MSU Student Health Services, Dr. Christine Mitchell, physician with the Bozeman Clinic, and Sean Armstrong, registered nurse and 2007-08 Fulbright Scholar in Public Health. The edited protocol was sent to Cliff Montagne in Renchinlumbe who presented it to Dr. Purevsuren for his approval. Sean Armstrong then had the protocol approved at the Ministry of Health in Ulaanbaatar, capital city of Mongolia, allowing the healthcare group to proceed with the health screenings with their arrival in Renchinlumbe.

### **Healthcare Group**

The Healthcare Group included: Kathe Westphal, Katie Newell, Rye Baerg, Katie Senter, Otgonsuren Arivmed, Baasansuren Damdin, Tsolmon Erdenebat, Uyanga Gonchigsuren and Susan Gibson. The group formed teams to conduct: blood pressure, glucose testing and urinalysis. Note the following about each of the group members:

Kathe Westphal, Physical Therapist and instructor of human anatomy and physiology at the University of Montana, checked the fasting glucose levels and assisted in writing the summary report for the community health screenings.

Katie Newell, Montana WWAMI Medical student, took blood pressures and helped with the urinalysis testing.

Rye Baerg, has BS in anthropology and currently teaches English as a second language, recorded the results of the urinalysis testing.

Katie Senter, MSU Biomedical student, participated in urinalysis testing and took blood pressures.

Jen Higgins, Fulbright Scholar from New York, helped in taking blood pressures.

Otgonsuren Arivmed, an ecological scientist with the Mongolian Institute of GeoEcology, served as a translator and collected the preliminary information from each Mongolian that participated in the community health screenings.

Baasansuren Damdin, physician and teacher from Health Sciences University of Mongolia (HSUM), served as a translator, collected data from the Mongolians participating in the health screenings and consulted with Dr. Purevsuren's office to identify children with physical and mental disabilities.

Tsolmon Erdenbat, Social Health student from HSUM, served as a translator and worked in cooperation with Baasansuren Damdin to identify children with physical and mental disabilities.

Uyanga Gonchigsuren, dental student from HSUM, provided dental screenings for the Mongolians that participated in the screenings.

Susan Gibson, human anatomy instructor, Montana WWAMI Medical Program, coordinated the healthcare group.

### **HEALTHCARE SCREENING PROCEDURES**

The Healthcare Group met on the day after arriving in Renchinlumbe and discussed the screenings and the surveys. Group members were assigned tasks of designing A) data tables to record and collect information on participants (i.e., name, consent, age, gender, age, etc.), B) survey questions of chronic diseases, C) dental screenings and D) a survey on the mental and physical disabilities of children.

Data tables for the community health screenings were set up to be recorded in Microsoft Excel.

A preliminary trip was arranged for the Healthcare Group to visit the families in Bag IV, a rural area near Renchinlumbe. The visit provided an opportunity to meet the countryside people, to inform family members about the free screenings and to educate them concerning the procedures that would be followed during the testing. The Mongolian translator explained the special needs for the glucose testing - fast for 8 hours before testing and told them that the healthcare group would provide containers for urine collection.

Two days of screening were setup in the countryside and one day in the Renchinlumbe hospital:

Day 1 of screening – 41 Mongolians in Bag IV were tested

Day 2 of screening – 10 Mongolians in Bag IV were tested

Day 3 of screening – 56 Mongolians were tested in the Renchinlumbe Soum hospital (52 from the Soum Center, 2 from Bag I and 2 Bag IV)

## **METHODS USED FOR COMMUNITY SCREENINGS**

The screening procedure was designed to be simple and efficient for the person being tested. The following procedure was followed:

1. At the countryside cabin/ger and at the hospital, 4 stations were set up, one for each of the tests to be performed: blood pressure, glucose testing, urinalysis and dental screening.
2. A Mongolian translator served as the resource person who collected names, consent, age, gender, education from each participant, recorded the information on the data table and explained the testing stations.
3. In addition, each individual participating was given a small card on which the results for blood pressure, glucose and urinalysis, i.e. specific gravity, urobilirubin and pH, were to be recorded
4. The healthcare person performing the tests entered the results on the small card as the individual being screened completed that specific station.
5. A Mongolian doctor and Social Health student from HSUM asked the survey questions of the participants and recorded the answers on the data table. They also collected information on mental and physical disabilities of children in the area and entered the data on a table.
6. The dental student from HSUM provided a free dental screening and toothbrush to participants. She recorded the results on a data table.
7. At the end of the screenings, the resource person collected the small cards with the test results and the information on the cards was transferred to the data table.
8. Results were recorded on the data table in English and Mongolian.

## **RESULTS OF SCREENINGS**

A total of 107 subjects were included in the study, 33 males and 74 females. The average age was  $38.7 \pm 16$  years (mean  $\pm$  SD). Test results revealed an average fasting plasma glucose of  $90.5 \pm 12.9$  mg/dl (mean  $\pm$  SD) (minimum to maximum range: 57 - 142 mg/dl) (ReliOn Ultima Glucosemeter, SolarTek Products Inc., Model XCB588-5291). Resting sitting systolic blood pressure was  $128 \pm 23$  mmHg (mean  $\pm$  SD) (minimum to maximum range: 95 - 220 mmHg), and resting sitting diastolic blood pressure was  $82 \pm 15$  mmHg (mean  $\pm$  SD) (minimum to maximum range: 54 - 140 mmHg). Preliminary ( $\Sigma = 50$  subjects) urinalysis (Multistix<sup>®</sup> urinalysis strips; Bayer HealthCare) results revealed a mean specific gravity of 1.01, pH of 5.0, and urobilinogen of 0.036 mg/dL. When asked by the healthcare group, six subjects reported to have been previously diagnosed with brucellosis; 31 subjects reported to have been previously diagnosed with high blood pressure; 36 subjects reported to have been previously diagnosed with heart disease; 56 subjects reported to have been previously diagnosed with kidney disease; 15 subjects reported to have been previously diagnosed with pulmonary disease; 15 subjects reported to have been previously diagnosed with liver disease; and, 10 subjects reported to have been previously diagnosed with gynecological diseases.

## **INTERPRETATION OF DATA OF HEALTH SCREENINGS**

Interpretation of these data suggests that the people of this region have relatively normal fasting plasma glucose values when using the standards of the American Diabetic Association (60 – 109 mg/dl). In addition, the mean resting systolic and diastolic blood pressures would be categorized as prehypertensive by the Seventh Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure. No group abnormalities were suggested by the urinalysis results, although some individuals did have abnormal values (i.e., evidence of blood or leucocytes in the urine). The responses to the questions asked by the healthcare group suggest the presence of significant pathologies, but it is the opinion of the authors that many subjects may have misunderstood the questions, or assumed the presence of a pathology based upon a sign or symptom that they may have self-diagnosed (back or flank pain and kidney disease).

## **RECOMMENDATIONS FOR FUTURE**

We recommend that the Director of the Renchinlhumbe People's Hospital (1) consider a follow-up reassessment of those individuals that reported specific health issues (i.e., a complaint of 'heart pain') or those that had abnormal blood pressure, glucose, or urinalysis values, and (2) supervise the continued collection of these same data for patients treated within his facility. The healthcare group has tried to facilitate this process by providing the hospital with two glucose meters, three blood pressure cuffs, three stethoscopes, and approximately 200 urinalysis strips. In addition, blank data tables similar to those utilized for this study have also been provided to expedite and organize the collection of this information. The authors of this study request that this information be provided to them at three month intervals over this next year (i.e., November 2007, February 2008, and May 2008) by sending the information to Dr. Cliff Montagne, Director of the MSU BioRegions Program.

## **FOLLOW-UP**

In spring 2008, Katie Senter, MSU Biomedical student who participated in this project, will complete a statistical analysis of the data. She will also compare these data with data collected earlier this summer at the Blue Valley Awards (local festival) and with health data gathered and published by the Mongolian Health Department in 2006 from Hovsgul Aimag.

Dr. Mark Quinn, Chairman, MSU Institutional Review Board (IRB), was contacted before the visit to Mongolia concerning the Community Health Screenings. He indicated that data collected this year could be used in subsequent years if a protocol for the community health screenings was approved by the Ministry of Health in Mongolia. Also, Dr. Quinn pointed out that after returning to MSU, each member of the healthcare group should file a Request for Designation of Research as Exempt from the Requirement of IRB Review. A

copy of the approved protocol by the Mongolian Ministry of Health is available if needed. Dr. Quinn has been contacted and the proper requests will be filed.

### **ACKNOWLEDGMENTS**

Many thanks are expressed to Sean Armstrong, Dr. Robert Flaherty and Dr. Christine Mitchell for their expertise in assisting in writing and in editing the protocol for the free health screenings. A thank you is extended to Dr. Flaherty, Dr. Mitchell for supplying the urinalysis strips, glucose meters, glucose strips and a blood pressure cuff. A thank you also goes to Ms. Ann Yocom and to MSU BioRegions for blood pressure cuffs and stethoscopes