

# The Grand-Aides® Program in Baotou, Inner Mongolia: A revolutionary health care workforce

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## Abstract

The Grand-Aides® Program is an innovative health care workforce model designed to help provide personalized health care to all by increasing access to care. This program trains grandparents and senior citizens as medical care workers in order to provide less expensive, more accessible, and more appropriate health care to patients from a trusted community member. The program aims to increase access to care while alleviating health care professional shortages and crowding in hospitals and community clinics. University of Virginia students traveled to the Inner Mongolia region of China to collect baseline data for a pilot study to determine the effectiveness of a future Grand-Aides program. The collected data suggested that 53% of all patients visiting the clinic and/or hospital over a period of one year could have been cared for by a Grand-Aide and supervisor, with children's visits showing an even higher percentage of symptoms treatable by a Grand-Aide at 74%. These results suggest that once successfully implemented, the Grand-Aides program will be able to have a significant impact on the health care system in Baotou, Inner Mongolia.

**Keywords:** Community health worker, primary care, health care workforce

## Introduction

Many people in Inner Mongolia live within walking distance of health care clinics; however, these clinics often have long waits and inconsistent care. As a result, these people may opt to remain untreated in an effort to avoid long lines and poor service. The only other option for care for the large, relatively poor population in this area is the emergency department. Emergency care is meant to stabilize patients with acute health problems, not provide consistent primary care or ongoing care for chronic diseases. Grand-Aides seeks to circumvent this problem by providing an intermediary source of personalized medical

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attention in the form of trained grandparents. We expect Grand-Aides will increase patient welfare, reduce overall hospital expenses, utilize resources more efficiently, take advantage of an eager pool of labor, and galvanize change that will further improve health care and increase both standard of living and life expectancy.

Grand-Aides was founded in 2008 with the idea that an experienced grandparent can successfully treat many of the medical cases presented in hospitals and health clinics worldwide. Since the formal establishment of Grand-Aides, pilot programs have been initiated domestically in Houston, Texas and Harrisonburg, Virginia and internationally in Shanghai and Baotou, Inner Mongolia with the prospect of starting more both nationally and abroad. While the Grand-Aides workforce model is currently undergoing pilot programs to gauge operational effectiveness and financial performance, research of the potential Grand-Aides utilization in international healthcare systems demonstrates high potential program impact. Continued interest from world leaders indicate a strong global belief in the benefits that Grand-Aides has to offer.

Regardless of the location of the program, every Grand-Aide must have the equivalent of a high school education, or significant health care experience, and successfully complete Grand-Aide training. The training program is customized to each program location, but usually it is divided into two-month sections punctuated by testing. Training of the primary care Grand-Aides begins in the classroom, where trainees learn about basic medical care and primary care protocols customized to medical practice in the region. Next, they enter a period of additional classroom training with a specific focus on fieldwork procedures followed by a period of supervised fieldwork, during which they begin to meet their patients and work according to their newly learned protocols. Finally the Grand-Aides enter a period of primary care fieldwork with an assessment every six months (1).

Once practicing, Grand-Aides care for 200 to 250 families as paid professionals. They will either make home visits (if available, using telemedicine that they bring with them such as Skype on a mobile phone) or give advice over the telephone if a family member complains of symptoms. Health professionals such as

nurses or physicians supervise the Grand-Aides during these calls and visits (the supervisor is on the phone and available whenever the Grand-Aides are working), ensuring quality while also allowing greater individual patient attention. Patients will still have access to physicians if needed, but this added level of primary attention will increase access to care so that symptoms do not remain untreated due to lack of access to care. In an effort to promote healthy behavior, Grand-Aides will also make home visits to teach preventative care and early management of primary care conditions (2).

Since Grand-Aides is a new program, it must be assessed and practical methods for implementation must be developed to determine the actual need for Grand-Aides in each area. With this in mind, the research team traveled to Baotou, Inner Mongolia, to begin the pilot project there by assessing the need for Grand-Aides and helping develop the methodology for the future assessment of the program's success.

The research goal was to determine the potential demand for Grand-Aides in a specific part of the Qingshan District in Baotou that is served by the Fourth Affiliated Hospital of the Inner Mongolia Medical College (IMMC). This community has three forms of health providers: the hospital clinic, a local community clinic, and an emergency department. In order to determine the demand, the research team reviewed medical records for the one-year period dated from January 1, 2009, to December 31, 2009 and answered the research question, what percentage of patients that visited these three venues could have been cared for by a Grand-Aide? Through analysis of the data in these medical records with methods explained below, the team numerically gauged the local need for Grand-Aides by determining what percentage of the population that visited the three venues could have been cared for by Grand-Aides instead. This data will also be used as a baseline for future studies on the success of the Grand-Aides program in Baotou.

In addition to this specific research goal, the research team conducted interviews with health care providers, the Grand-Aides, and members of the community in order to develop recommendations for the adaptation of the Grand-Aides program for this specific community. Grand-Aides is a program that has the potential to be particularly successful in

communities where elders are truly valued, trusted members of society as they traditionally are in China.

When the team from University of Virginia (UVA) arrived in Baotou, the six Grand-Aides participating in the pilot study had already been chosen and were beginning their training. The team worked with Dr. Garson and medical professionals in China to adapt the training materials for this specific region and to determine which diagnoses Grand-Aides would be allowed to treat. The Grand-Aides program is easily adaptable to different needs in different countries and environments through collaboration with local health care providers and community members.

## Methods

Data collection involved compiling all available medical records from the emergency department, hospital clinics, and community clinics in a specific neighborhood in Baotou. In total, 50 medical record books were utilized for the study, containing 35,148 individual patient visit entries. With a full calendar year of data, the research team was confident that the

collected data was representative of the health care utilization trends of the Baotou community because any seasonal trends could be recognized and accounted for in the results. With a large and random sample, the data could be used to determine the future demand for Grand-Aides in the area.

All of the medical records were hand written in Chinese; therefore, data were collected after translation from Chinese to English. Each member of the research team from UVA paired with an IMMC student to translate medical records and record the relevant patient data in English. The following data variables were collected: patient visit location, date, sex, age, and diagnosis. The patient diagnosis was reported by clinical condition name if the patient had one of the 28 common conditions that could be potentially cared for by a Grand-Aide, as listed in Table 1. If the patient did not have one of the 28 common conditions, then “not applicable” was recorded in the patient visit entry. A patient entry was completely omitted if any part of the entry was illegible, as determined by the IMMC student. The project received a waiver from the Institutional Review Board of the University of Virginia.

**Table 1. List of 28 Common Conditions Potentially Cared for by a Grand-Aide**

Common Cold	Nausea, Vomiting, Adult
Congestion	Nausea, Vomiting, Child
Cough	Abrasion
Earache, Drainage	Insect Bite
Headache	Rash, Adult
Sore Throat	Rash, Child
Abdominal Pain, Adult	Back Pain
Abdominal Pain, Child	Joint Pain, Swelling
Constipation	Breastfeeding Problems
Diarrhea, Adult	Spitting Up, Infant
Diarrhea, Child	Diaper Rash
Gas, Belching	Excessive Crying
Gas, Flatulence	Fever, Adult
Indigestion	Fever, Child

Data were collected and analyzed using Microsoft Excel. The research question was analyzed by calculating the count and percentage of pediatric and adult cases that Grand-Aides could have potentially

cared for at the Community Clinic, Hospital Clinics, and Hospital Emergency Department. In determining the percentages of patient visits that could have been treated by Grand-Aides, we assumed that Grand-

Aides could care for all patients affected by the 28 common conditions (See Table 1).

The resulting analysis determined the percentage of patients with one of the 28 common conditions divided by the total number of patient visits collected from each of the three health care provider locations.

In addition to the qualitative research, the team conducted informal interviews, translated by the Chinese partners, with Grand-Aides and community members about how the program would be received once it began later in the year. The results of these

interviews were used to develop recommendations for the initial implementation of the program.

## Results

A total number of 35,148 patient visits were observed at three different locations: a community clinic, hospital clinic, and hospital emergency department. Results are summarized in Figure 1 below.

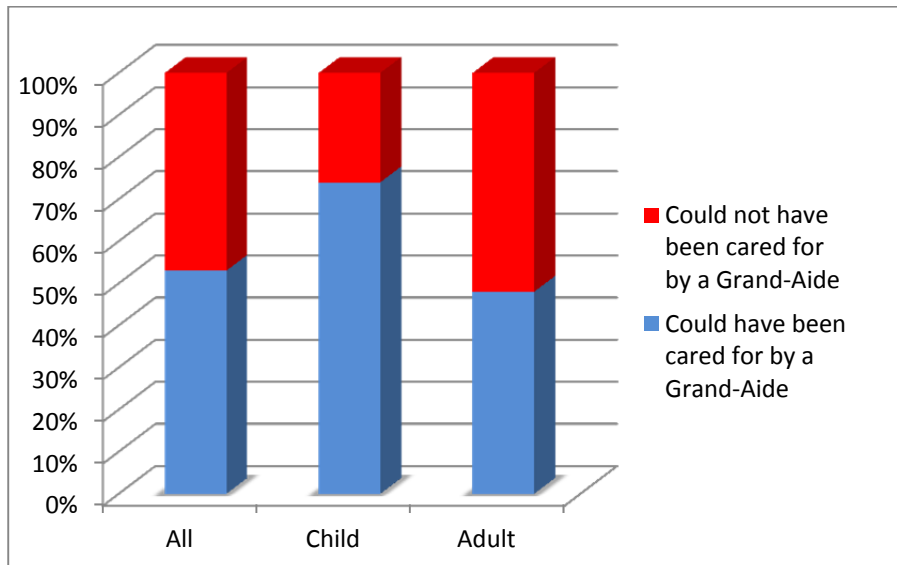


Figure 1. Total Percentage of Patient Visits Potentially Cared for by a Grand-Aide

	All	Child	Adult
<b>Total Percentage</b>	<b>53% (n=18,625)</b>	<b>74% (n=5076)</b>	<b>48% (n=13,549)</b>

In total, 18,625 patients were diagnosed with 1 of the 28 common conditions potentially cared for by a Grand-Aide. Therefore, roughly 52% of the annual patient visits at these locations could have been at least initially cared for by a Grand-Aide and supervisor. About 74% of pediatric patients and 48% of adult patients could have been cared for by a Grand-Aide and supervisor. A breakdown of the results by location is shown in Figure 2 below.

At 64%, the community clinic had the highest percentage of patients diagnosed with 1 of the 28 common conditions. The community clinic had the

highest percentage of pediatric patients potentially cared for by a Grand-Aide at 87%. They also had the highest number of adult patients with 1 of the 28 common conditions at 62%.

In the hospital clinics, 46% of the patients were diagnosed with 1 of the 28 common conditions. As in the community clinic, categorizing patients by age within the hospital clinics showed a significant variation between pediatric and adult patients: 75% of pediatric patients and 32% of adult patients had diagnoses that could potentially be cared for by a Grand-Aide and supervisor.

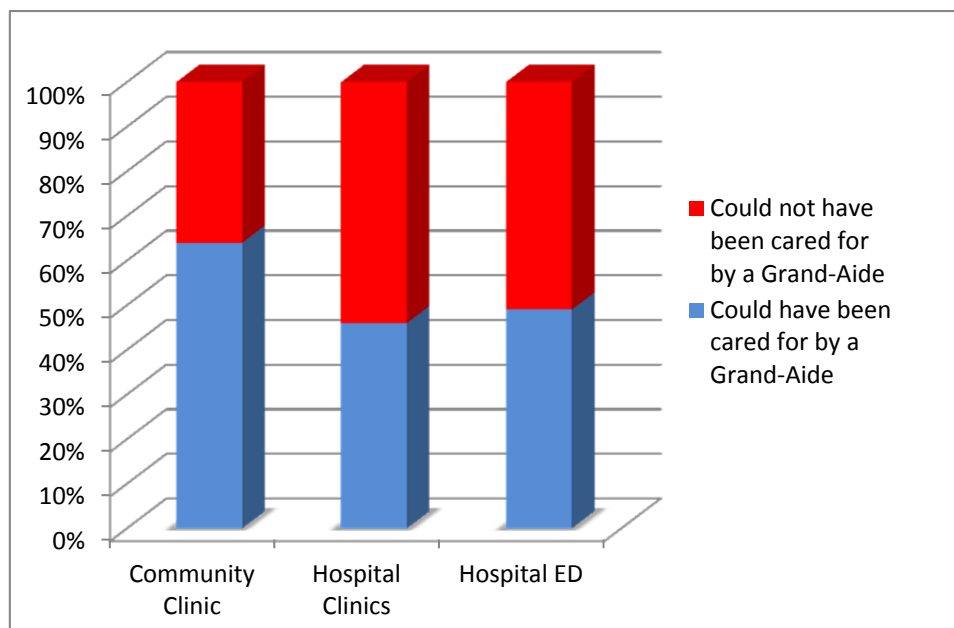


Figure 2. Total Percentage of Patient Visits Potentially Cared for By a Grand-Aide at Each Location.

	All	Child	Adult
<b>Community Clinic</b>	64% (n=7593)	87% (n=6648)	62% (n=945)
<b>Hospital Clinics</b>	46% (n=7007)	75% (n=3860)	32% (n=3147)
<b>Hospital ED</b>	49% (n=4025)	47% (n=271)	49% (n=3754)

Similar to the hospital clinics, 49% of the patients visiting the hospital ED were diagnosed with 1 of the 28 common conditions. Variation by patient age was minimal, with 47% of pediatric and 49% of adult patients potentially cared for by a Grand-Aide and supervisor.

From the informal interviews, the research team found that for adult care, the community was receptive to the idea of calling a trusted community member before going to the doctor. The overall impression in the community was that people did not find the hospital or clinic visits pleasant and would prefer to talk to a neighbor they trust: confidentiality concerns were not high.

Interestingly, the team found that parents are extremely protective of their children in this community, leading to frequent doctor visits and a strong reluctance to accept the idea of trusting a Grand-Aide over a physician in the care of a child.

## Discussion

The goal of this project was to determine the applicability and the need for Grand-Aides in Baotou, Inner Mongolia. The results of the study showed that almost half of adults and nearly three quarters of children went into a clinic or emergency department for symptoms that could be treated by a Grand-Aide with basic health care training. Therefore, the Grand-Aides Program could significantly improve both the quality of and access to health care in this region of Baotou while decreasing the cost of care.

Introducing Grand-Aides would improve this community's health care system in several ways. First, it would increase access to health care: another level of care would be available to all patients. Rather than having to miss work and wait in line at a clinic or emergency room, patients would be able to call a Grand-Aide and receive the care they need right away. The Grand-Aides program could also greatly improve the quality of care patients receive. Grand-Aides would have more time to spend with patients than doctors, so they could form closer patient-

caregiver relationships, be able to do house calls, and keep their patients on track through treatment plans. This level of care could greatly improve the quality of available health care. The high percentage of cases that could be treated by a Grand-Aide means that this program could have a profound impact by decreasing the overcrowding and waiting time in clinics and hospitals and by allowing doctors to focus more on the patients who really need a higher level of training in order to be treated.

The idea of adding community health workers (CHWs) to the health care workforce is not a new one. It has been both highly criticized and successfully implemented around the world, depending on the structure and organization of the program. Similar programs to Grand-Aides, for example, Brazil's *Programa Agente Comunitário de Saúde* and Ghana's National Community Health Worker Programme, have had great success with using CHWs to deliver primary care, curative treatments, and health education, much like a Grand-Aide would (3). In Brazil in 1994, just five years after adoption of this national program, infant mortality dropped by 32% and from 2003 - 2006 hospitalization dropped from 52 to 38 people per 10,000 (4). In Ghana, after 6 years of starting its nationwide program, there was a 33% reduction in child mortality (5). The successes of these similar programs in decreasing mortality rates and improving health outcomes of their populations suggest that Grand-Aides could have similar success.

Because community health worker programs exist in different forms in many countries, the World Health Organization (WHO) completed a report in 2007, *Community Health Workers: What do we know about them?*, where they identified four main statements about community health workers there seemed to be a consensus about based on a thorough review of many of the programs in existence at the time. They found that first, "CHWs can make a valuable contribution to community development and, more specifically, can improve access to and coverage of communities with basic health services: there is robust evidence that CHWs can undertake actions that lead to improved health outcomes" (4, p.26). Grand-Aides will be trained to perform the types of actions that lead to both improved outcomes and access to care. Second, in order for programs to work

effectively, their members must be "carefully selected, appropriately trained and – very important – adequately and continuously supported" (4, p.26). Grand-Aides follows this paradigm by specifically selecting older members of the community for their wisdom and respect from society and training them to become part of a primary health care team working towards the best interests of all of its patients. Third, the WHO is careful to highlight that because of the training, support, and management necessary for a successful program, "CHW programs are neither the panacea for weak health systems nor a cheap option to provide access to health care for underserved populations" (4, p.26). In the Grand-Aides program, the community health worker, the Grand-Aide, leverages the capabilities of the current health care system by increasing the number of patients the team as a whole is able to take care of; it requires a health system to support it. Finally, the WHO cautions that "CHW programs are vulnerable unless they are driven, owned by, and firmly embedded in communities themselves" (4, p.26). The Grand-Aides program is inherently owned by its community: Grand-Aides are already the leaders in the community and are now trained to provide an even greater service to their neighbors. Based on these four WHO findings in combination with the specific needs suggested by this study, Grand-Aides is set up to be a great success in Baotou.

## Limitations

Our results suggest an overwhelming need for Grand-Aides in Baotou; however, there were some noteworthy limitations on the data used. In order to perform this research, researchers collected all of the hand-written ledger books for a full calendar year from the three desired locations. The entire year was used in order to have a statistically significant number of records in each location and to be sure that the data would not be affected by the inherent seasonality of certain illnesses (for example, more people are likely to get the flu during flu season).

The data from this experiment were not complete, however, because some ledger books had been lost over the year and others were written such that they were illegible to the Chinese students who were

translating them. Although some of the data were missing, the results were still statistically significant because the data that were missing were determined to be random (from different time periods and clinics) and there was still a large enough data set.

Another problem with our data was that it was all written in Chinese, so it had to be translated before it could be recorded into Excel. There could have been some translational errors that occurred, but each translator learned English at the same school and was given the same training as to how to complete this study, so any errors that did occur should have occurred consistently throughout the process. There was ongoing dialogue between the translating students and the research team, so the likelihood of translational error is minimal.

Finally, health care records in the clinics visited in this study were not as consistent or thorough as those in the United States. Often, patients would have a single symptom listed, "headache" for example, and there would be no further information. Since "headache" is one of the conditions that Grand-Aides will be trained to treat, this would be listed as a patient that could have been cared for by a Grand-Aide. However, this patient could have had additional, more complex symptoms or diseases that were simply not recorded in the records. Because of the potential incompleteness of these records, the percentages found in this study could be higher than the actual percentages of patients that could be cared for by a Grand-Aide. This problem, however, does not have strong implications on the implementation of Grand-Aides in Baotou: even decreasing the number of patients who go to the clinics by 10% would greatly improve the access and quality of health care.

## Conclusion

The results from this study show that the Grand-Aides program would not only succeed in Baotou, but could improve the health of this population. The health of this population suffers from the overcrowding and long wait times in clinics and hospitals. This study shows that a high percentage of the patients in these clinics and hospitals could be taken care of by a Grand-Aide instead. In addition to helping solve overcrowding problems, Grand-Aides will be able to

provide higher quality primary care by spending more time with patients and providing more personal, individualized care. Six Grand-Aides began training in the summer of 2010 in Baotou. The Grand-Aides pilot project in Baotou is now in need of government funding, which has been applied for, in order to continue. Once funding is received and the project continues, the results from this study will be used as a baseline to compare with later data on hospital and clinic visit numbers and symptoms as Grand-Aides are introduced into their health care system. Hopefully, Grand-Aides will generate results within the community showing increased access and quality of health care, decreased costs, and improved overall health of the population.

The Grand-Aides program is easily adaptable to different cultures and communities as it is inherently a community-based program aiming to improve health care by training trusted community members. The goal is to allow these figureheads of society to increase their role in the health of their communities by becoming valuable members of the health care team. Because of its potential for success in both rural and urban settings, both internationally and abroad, the Grand-Aides program is quickly spreading to over ten countries including pilots in Bangladesh, Indonesia, and Australia and over fifteen sites in the US including Houston, Boston, and New York City. This revolutionary health care workforce team-based model has extremely high potential to improve access to and quality of health care while decreasing costs; it gives communities responsibility for their own health by granting ownership to its most respected members.

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