



Final Report – MLC-3, Year 3

Case Summary Narrative – Grand Traverse County Health Department

Quality Improvement Project Title:

Improving Food Safety Knowledge for All

Quality Improvement Project Target Area:

Culturally Appropriate Services

LHD Overview:

Grand Traverse County Health Department has fifty-seven employees that serve a population of 86,000 full time residents. During the summer months, the residential population will increase to approximately 95,000. The Health Department is located a few miles south of Traverse City which affords easy access for both urban and rural clients. Traverse City and neighboring Garfield Township are considered the urban centers of the County. However, over 60% of the population lives in the rural townships.

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Introduction

Grand Traverse County Health Department (GTCHD) Quality Improvement Team selected food safety training disparities among Chinese restaurant workers as an improvement project. Food safety training exam scores were disproportionately low among Chinese food service workers in Grand Traverse County. The goal of the project was to use QI techniques and tools to determine why such a learning disparity existed among Chinese food service workers and develop an improvement theory to address the problem. The strategy involved assessing the needs of the Chinese food service workers. A key component of the strategy involved including Chinese restaurant owners/managers/workers in the process to accurately identify the needs of the workers regarding food safety training. Once the needs assessment was done and potential root causes identified, an improvement theory was developed to improve food safety knowledge.

Step One: Getting Started

Historically, GTCHD Sanitarians have been challenged when training food service workers with limited English proficiency (LEP) from Chinese restaurants. The language barrier that prevents comprehension of food safety knowledge indicates a significant gap in service and public health. The relevance and value of the food safety information distributed to clients with LEP is

unknown. The challenge is assessing the need and matching the culturally appropriate service to the client to teach food safety concepts, practices, and methods.

Only five of the twelve workers from Chinese restaurants who attended National Restaurant Association (NRA) ServSafe® food safety courses in 2009 actually passed to become certified. This failure rate of 58% is well above the failure rate of 4% observed in the cohort of remaining students in 2009 (see appendix). Obviously, the current paradigm regarding food safety training for Chinese food service workers was failing. The GTCHD QI Team recognized that the low ServSafe passing rate among Chinese food service workers was serious problem which would be a perfect candidate for a quality improvement project.

GTCHD administration including the Health Officer, Financial Services Director, Personal Health Administrator, and Environmental Health Manager were involved in the initial planning stages of the QI project. Administration solicited and appointed core team members based on experience and skills. Significant staff time allocated to execute the project. Training began with a two day learning session which initiated the QI learning process and project development.

Step Two: Assemble the Team

The GTCHD Quality Improvement Team was assembled to access a diverse group of individuals within the organization. Because the project involved the Environmental Health Division food safety program, the EH Director was a logical choice for the team. In addition to managing Environmental Health, the EH Director also is the ServSafe Instructor for GTCHD. In order to facilitate the goal of spreading CQI within all programs of the Health Department, the Personal Health Administrator was selected. The PH Administrator is located in the main Health Department building and manages several programs and staff. The GTCHD Community Outreach Coordinator has experience and expertise in communication, marketing, and graphic design. These assets were considered critical to the success of the project and perfect attributes for the team scribe. The team leader is an Environmental Sanitarian with varied experience. The team leader has coordinated accreditation review of Powers and Duties of the Health Department, coordinated logistics for H1N1 vaccination, and has conducted research and developed programs and policies. The team leader's innovative style, coordination skills, and statistical skills were considered key qualities for the management of the QI project.

The first task of the QI Team was to develop a work plan to guide the team including a schedule of all the team meetings and MPHI meetings and webinars. The work plan (Table 1) was updated continuously throughout the course of the project to adjust the timeline. Initially, the QI Team decided to meet weekly every Wednesday for 2 hours. This schedule was kept for stage one – "Plan" of PDSA. The "Plan" stage required the most work and was the point in time when the QI Team learned the most about selecting and using QI tools. Gradually, the QI Team began to meet less frequently for two reasons: First, most of the hard work had been completed and second, the team lost two of its members. Lisa Peacock and Jeannine Taylor both left GTCHD for other opportunities just prior to initiating the stage two – "DO" of PDSA. Due to the complexity and progression of the project, the team leader decided not to replace the two lost team members.

**Grand Traverse County Health Department
MLC-3 Quality Improvement Work Plan
May 2010 — February 2011**

Month	Task	Month	Task
May	<ul style="list-style-type: none"> • MLC-3 Learning Session • Finalize Team • Set-up team meeting schedule (Wednesdays 2 to 4 p.m.) • Refine Aim Statement • Work on QI Tools (Process Map, Fishbone Diagram) • Work on Team Charter 	October	<ul style="list-style-type: none"> • Stage 3 "Study" of PDSA • MLC-3 Tele-conference • Team Meetings
June	<ul style="list-style-type: none"> • Team meetings • MLC-3 site visit • Continue working on Step 3 of Plan Stage 	Nov.	<ul style="list-style-type: none"> • Stage 4 "Act" of PDSA • MLC-3 mini-collaborative • Team Meetings
July	<ul style="list-style-type: none"> • Team Meetings • Step 4 and 5 of Plan Stage • MLC-3 Webinar • MLC-3 Mini-collaborative teleconference 	Dec.	<ul style="list-style-type: none"> • Stage 4 "Act" of PDSA • Story Board • Team Meetings
August	<ul style="list-style-type: none"> • MLC-3 Webinar • Team meetings • MLC-Tele-conference • Stage 2 "Do" of PDSA 	January	<ul style="list-style-type: none"> • Stage 4 "Act" of PDSA • MLC-3 Teleconference • Story Board • Team Meetings • Final Report
Sept.	<ul style="list-style-type: none"> • Team meetings • Stage 3 "Study" of PDSA • MLC-3 Webinar 	February	<ul style="list-style-type: none"> • Stage 4 "Act" of PDSA • Story Board • Final Report

Table 1. Describes the project timeline.

The QI Team developed its initial AIM Statement during one of the first meetings. By following Section 5 of *Embracing Quality in Local Public Health: Michigan's Quality Improvement Guidebook*, the team was able to follow the examples and record the first draft of the AIM Statement.

By January 15, 2011, food service workers from Chinese restaurants will demonstrate a 20% increase in the ServSafe exam passing rate after receiving culturally appropriate training and educational materials provided by GTCHD Environmental Health program staff.

Step Three: Examine the Current Approach

GTCHD created a process map (Figure 1) to outline the current process for scheduling students for a ServSafe course and exam.

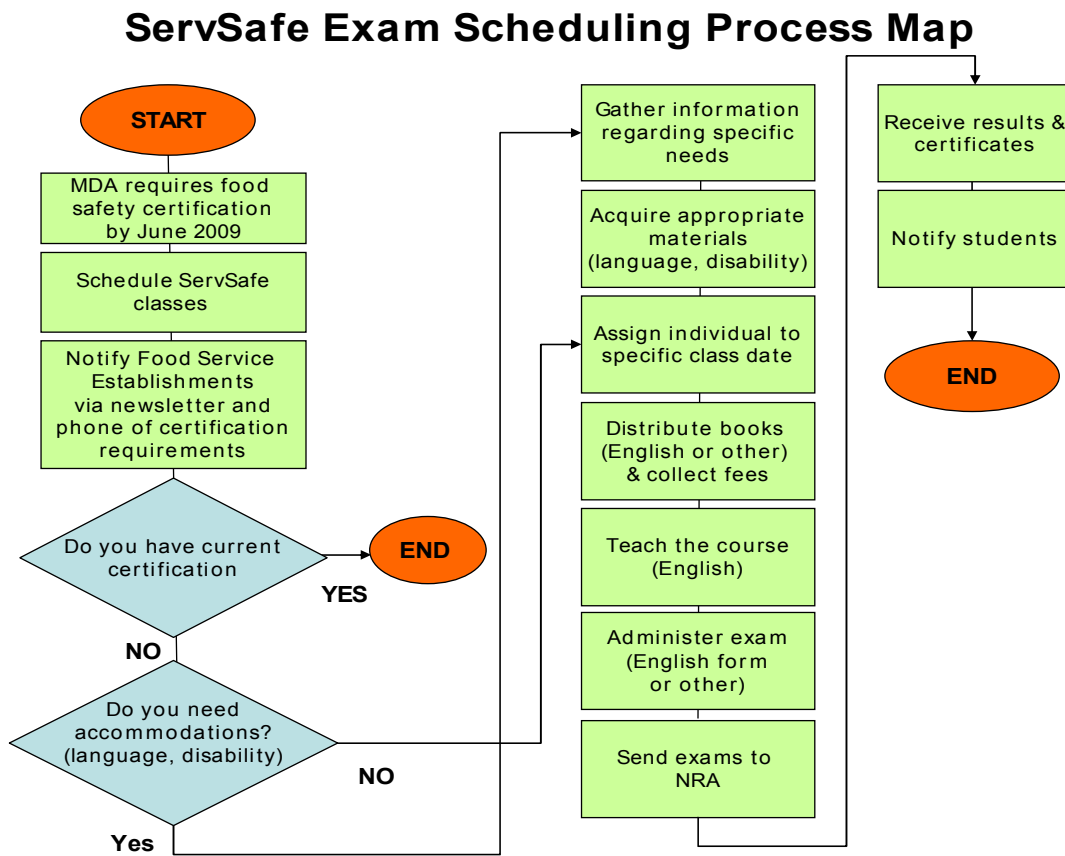


Figure 1. Process Map

Using the process map, GTCHD QI Team identified the following problem areas:

- There is no standard policy for identifying specific needs regarding language or disability.
- Even though students may request a non-English book and exam, the course is only

- offered in English.
- No translator available for Chinese food service workers to ask ServSafe instructor questions from text book.
- No follow-up survey for students to measure course and exam quality (no quality assurance).
- Little follow-up for students who failed exam to determine root cause (no follow-up for Chinese students).

The process map exercise revealed some important factors; however the need for further investigation to determine possible root causes was evident.

GTCHD employed a fishbone (cause and effect) diagram (Figure 2) to determine possible causes of the low ServSafe exam passing rate among food service workers from Chinese restaurants. The most significant factor was identified as communication problems between GTCHD staff and Chinese restaurant staff due to language barriers. During this exercise, it was apparent that many assumptions were made regarding issues within the Chinese restaurants. GTCHD decided that a focus group of restaurant owners/managers would be helpful to determine the perspective from our client's viewpoint.

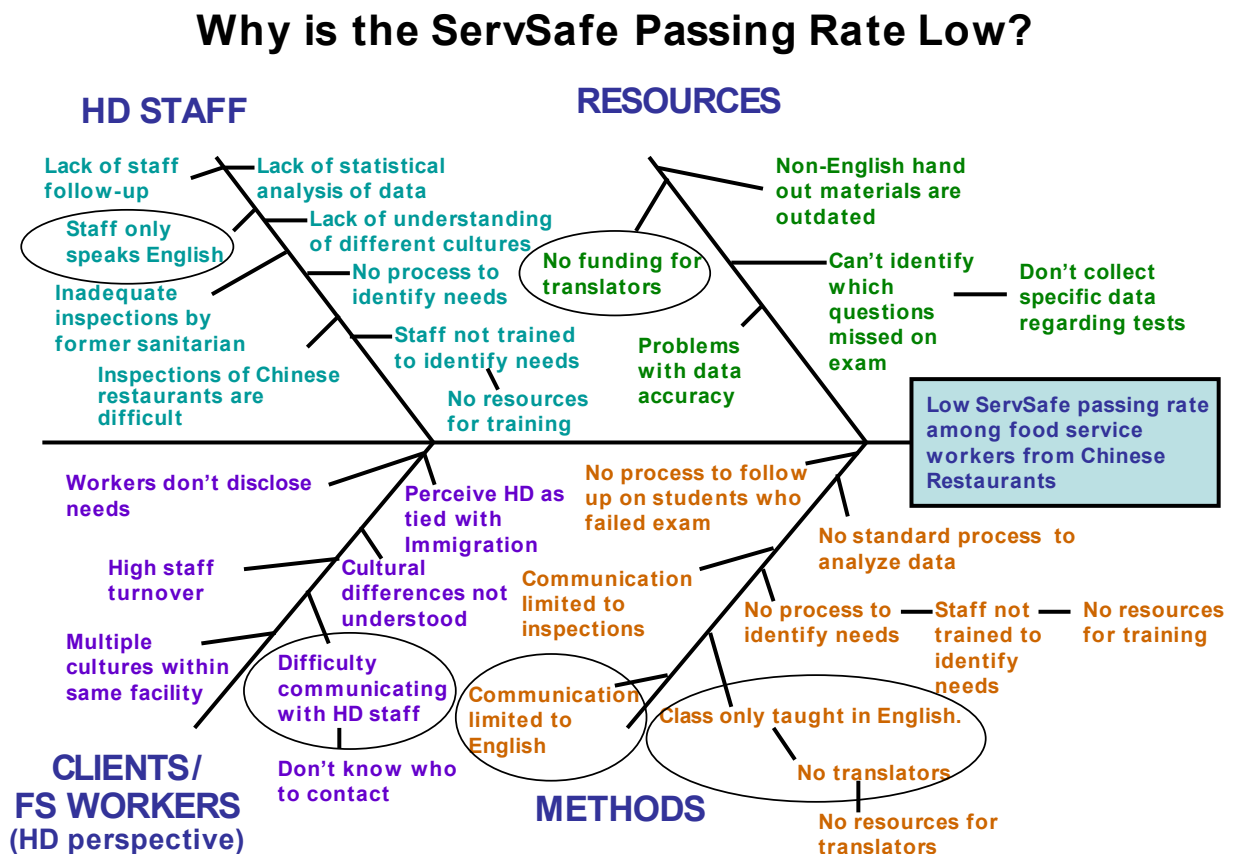


Figure 2. Fishbone diagram with Health Department perspective

The GTCHD Quality Improvement Team held a focus group meeting for owners/operators of Chinese restaurants on June 22, 2010. The meeting began with a welcome and introduction period. Once the group was comfortable, the QI Team presented the current status of food safety training for Chinese restaurants including the low ServSafe passing rate among Chinese students. One of the restaurant owners speaks English fluently and was able to act as interpreter between the QI Team and the other owners/mangers. There was much discussion regarding the demographics of Chinese food service workers and ways to communicate.

Chinese Restaurant Owner/Operator Focus Group Brainstorming Session

- **Chinese workers are preferred over Americans because Chinese workers are proficient in a particular style of cooking using very hot woks and sharp knives for cutting.**
- **The Cultural Revolution took place from 1966 to 1976 where there was a lack of education in China. There were either no schools or very poorly run schools, so children were not educated well during that time. Many people working in Chinese restaurants were school age during this time.**
- **According to Henry (of China Fair), simplified Chinese is the primary language that most of them read. The older generation can read traditional, but the younger generation can only read simplified. Simplified utilizes simple characters, while traditional is much more complicated to read and is more drawn out.**
- **When asked what would help regarding food safety training and understanding, they said that having the lessons in Chinese would help. But they do not have time to read the whole book because the owners of these restaurants have to work all the time, unlike owners of American businesses.**
- **They said they have difficulty understanding even the translated versions because they are translated from English to Chinese and the words do not translate the same when they are read.**
- **They said they have an understanding of the basics regarding food safety, but much of the information in the book goes very in-depth and they struggle to understand it.**
- **When asked if language was the biggest barrier to them passing ServSafe and to learning food safety techniques, they said yes, it is language.**
- **They suggested having posters that could be hung in their kitchens for employees that were in both English and Simplified Chinese.**
- **Many Asian workers can read English even if they cannot speak it. English is taught in school in China from a young age, but spoken English is not retained.**
- **They suggested putting the Health Department logo on all of the posters so that they will be taken seriously.**
- **They all agreed that administering a survey to all Asian restaurants to gather more data would be fine. They would be willing to review the survey and any literature that we assemble to make sure it makes sense**

Figure 3. Focus group brains storming session

The QI Team presented the focus group with an exercise known as the Nominal Group Technique (NGT) which is used to prioritize and generate a course of action. The NGT exercise started with posing a question pertaining to problems that exist regarding food safety training for Chinese food service workers. Each focus group member was polled to answer the question and then the answers were listed on a large dry erase board. Each group member was asked to prioritize each of the answers using a ranking system. The figure below illustrates the results of the NGT exercise (Figure 4).

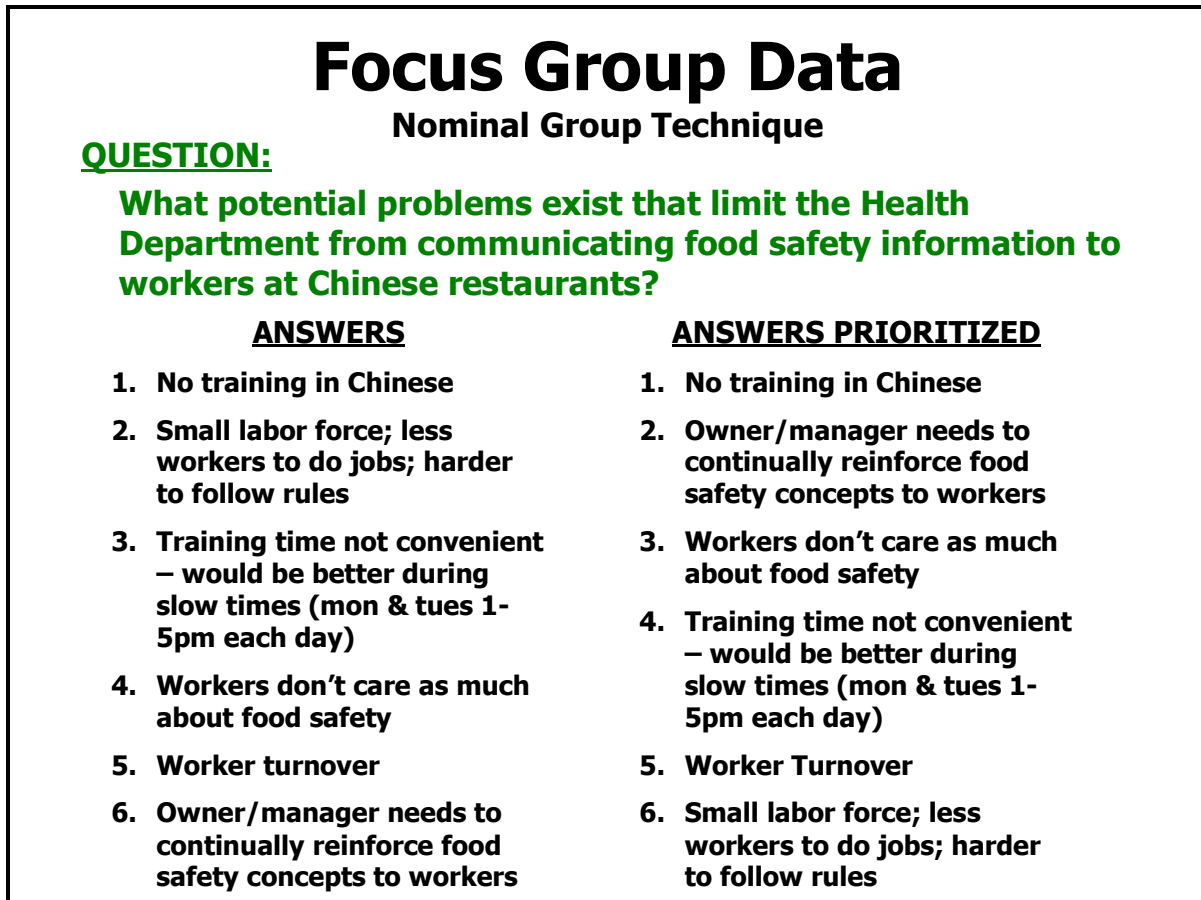


Figure 4. Nominal Group Technique (NGT) exercise

In order to further identify the root cause, an Interrelationship Diagram (Figure 5) was employed to study the cause and effect relationship between prioritized answers from the NGT exercise. The answers from the NGT exercise were arranged in a circle and then a line was drawn between answers if a relationship exists. Next, an arrow was drawn on the line pointed to the item that is most affected by the other. The number of arrows going in and the number of arrows stemming from each cause were counted. The factor or cause with the most outgoing arrows is ranked the highest. In this case, the cause "No Training in Chinese," was ranked the highest and correlates with results of the other tools used to identify the root cause of the low ServSafe passing rate. "Small Labor Force," was also identified as a cause that has significant influence on the other factors. However, the problem of a small labor force is not a factor that can be controlled by GTCHD and therefore the QI Team focused on the issue of "No Training in Chinese."

Interrelationship Diagram

Causes from Nominal Group Technique Exercise

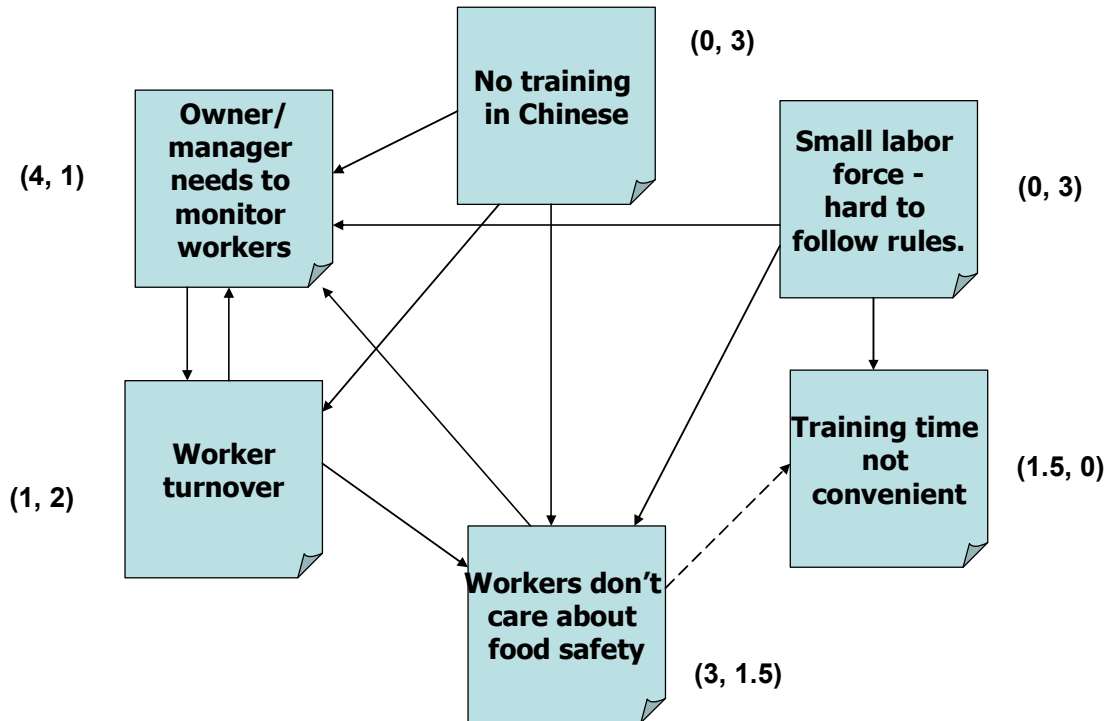


Figure 5. Interrelationship Diagram

The original fishbone diagram was redone after the focus group exercise. The second version of the fishbone diagram (Figure 6) was developed to reflect potential causes as determined by our clients, the owners/operators of Chinese restaurants in Grand Traverse County, as opposed to assumptions made by the QI Team.

At this point in time, GTCHD QI Team decided to revise the initial AIM statement. The first AIM statement was too specific and erroneously stated "how" the team was going to achieve the goal. The revised AIM statement is as follows:

By January 15, 2011, food service workers from Chinese restaurants will demonstrate a 20% increase in the ServSafe exam passing rate.

Why is the ServSafe Passing Rate Low?

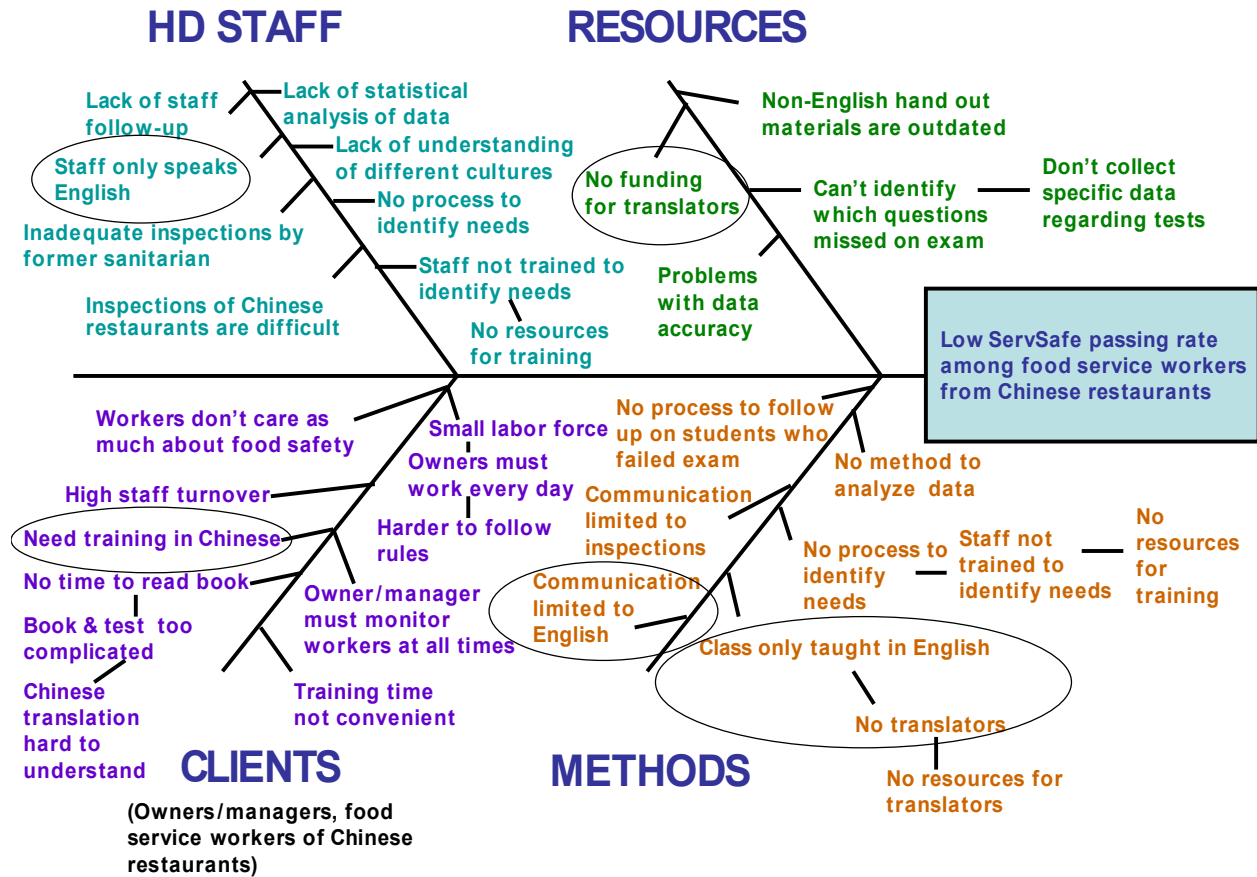


Figure 6. Fishbone diagram with client's perspective

Step Four: Identify Potential Solutions

GTCHD QI Team identified potential solutions based on root cause analyses and focus group data. The QI tools and focus group clearly identified the language barrier as the root cause for the low ServSafe passing rate among Chinese food service workers. One potential solution was evident in order to meet the requirements of the AIM statement: Structure a ServSafe course specifically for Chinese food service workers. The following criteria would be key components of the improvement:

- Teach the course in Simplified (Mandarin) Chinese using a Chinese instructor or interpreter
- Structure the course to meet the needs of the student's busy schedule.
- Provide the course, Chinese text book, and Chinese exam free of charge to encourage all area Chinese restaurants to participate by sending as many employees as possible.

The QI Team selected a morphing diagram (Figure 7) to graphically display the intended improvement. Using this tool helped the team visualize the ultimate goal and guide the work going forward.

Morphing Diagram

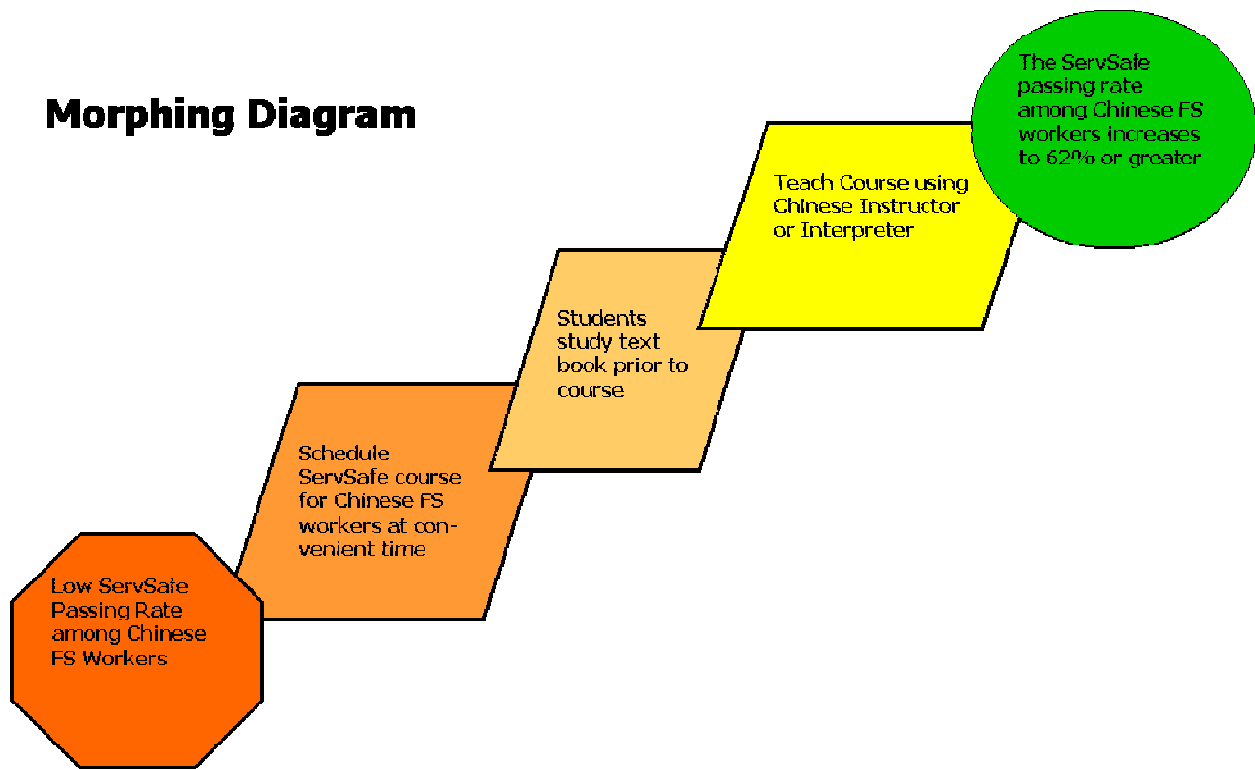


Figure 7. Morphing diagram of intended improvement

Step Five: Develop an Improvement Theory

GTCHD QI Team developed an improvement theory to increase food safety knowledge among Chinese FS workers. The outcome of the improvement theory is described as follows:

- **If GTCHD provides a ServSafe course which is taught using the Simplified Chinese language by means of a Chinese instructor/interpreter, Chinese text books, and Chinese exam forms, then Chinese FS workers will demonstrate a 20% increase in the ServSafe exam passing rate.**
- **If GTCHD schedules the Chinese ServSafe course on a Monday and Tuesday which are slow days for Chinese restaurants, then the number of potential students will be maximized.**
- **If GTCHD offers the Chinese ServSafe course free of charge, then Chinese restaurant owners will be more likely to send kitchen staff to the training.**

Step Six: Test the Theory

GTCHD planned a Chinese ServSafe course and exam.

- GTCHD QI Team searched for a Chinese ServSafe instructor. Availability of a certified ServSafe instructor who teaches the course in Chinese was minimal. Also, the instructor that was available charged a significant amount of money for their services. As recommended by the QI Team's mentor, GTCHD contacted Jean Chang, Epidemiologist from Public Health Muskegon County to inquire about interpretation services. Jean Chang speaks Chinese and English fluently and recently helped teach a Chinese ServSafe class for Muskegon County Chinese restaurants. Jean agreed to assist GTCHD with a Chinese ServSafe course.
- GTCHD collaborated with Dorothy Wicks, Genesee County Health Department Environmental Health Supervisor, who provided GTCHD with a professionally produced DVD of a Chinese ServSafe course hosted by Genesee County Health Department and taught by Sheree Lin, PhD, a certified ServSafe instructor.
- GTCHD QI Team scheduled a special two-day Chinese ServSafe Course for Monday, August 30th and Tuesday, August 31st, 2010. The two-day course structure was based on successful Chinese ServSafe courses offered by Genesee County Health Department and Public Health — Muskegon County. Also, Monday and Tuesday were selected based on the recommendation of the Chinese Restaurant Focus Group that those days were the best to conduct training due to low customer volume in the restaurants.
- GTCHD developed a flyer advertising the Chinese ServSafe Course and had it translated into Simplified Chinese (Mandarin). The flyer was hand delivered to all the Chinese restaurants in Grand Traverse County six weeks prior to the course. Also, the flyer was sent to all neighboring Health Departments and a message regarding the class was sent to the Environmental Health Directors email listserv.
- Despite the advertisement and follow-up visits and phone calls to area Chinese restaurants, only eight students signed up for the class. The ServSafe text book was distributed to the students 3 weeks prior to the course.
- The Chinese ServSafe course proceeded using a combination of the Chinese ServSafe video presentation and live discussion and review with Jean Chang. Also, GTCHD ServSafe instructor, Tom Buss, interacted with the students using Jean Chang as the interpreter. Most of the students were engaged in the class discussions and asked questions tailored toward individual experiences and situations.

Course Results:

- **Three students out of eight passed the Chinese ServSafe exam which yielded a 37.5% passing rate.**
- **The course results did not meet the GTCHD QI Team AIM Statement requirement of a 62% passing rate or higher.**

Step Seven: Study the Results

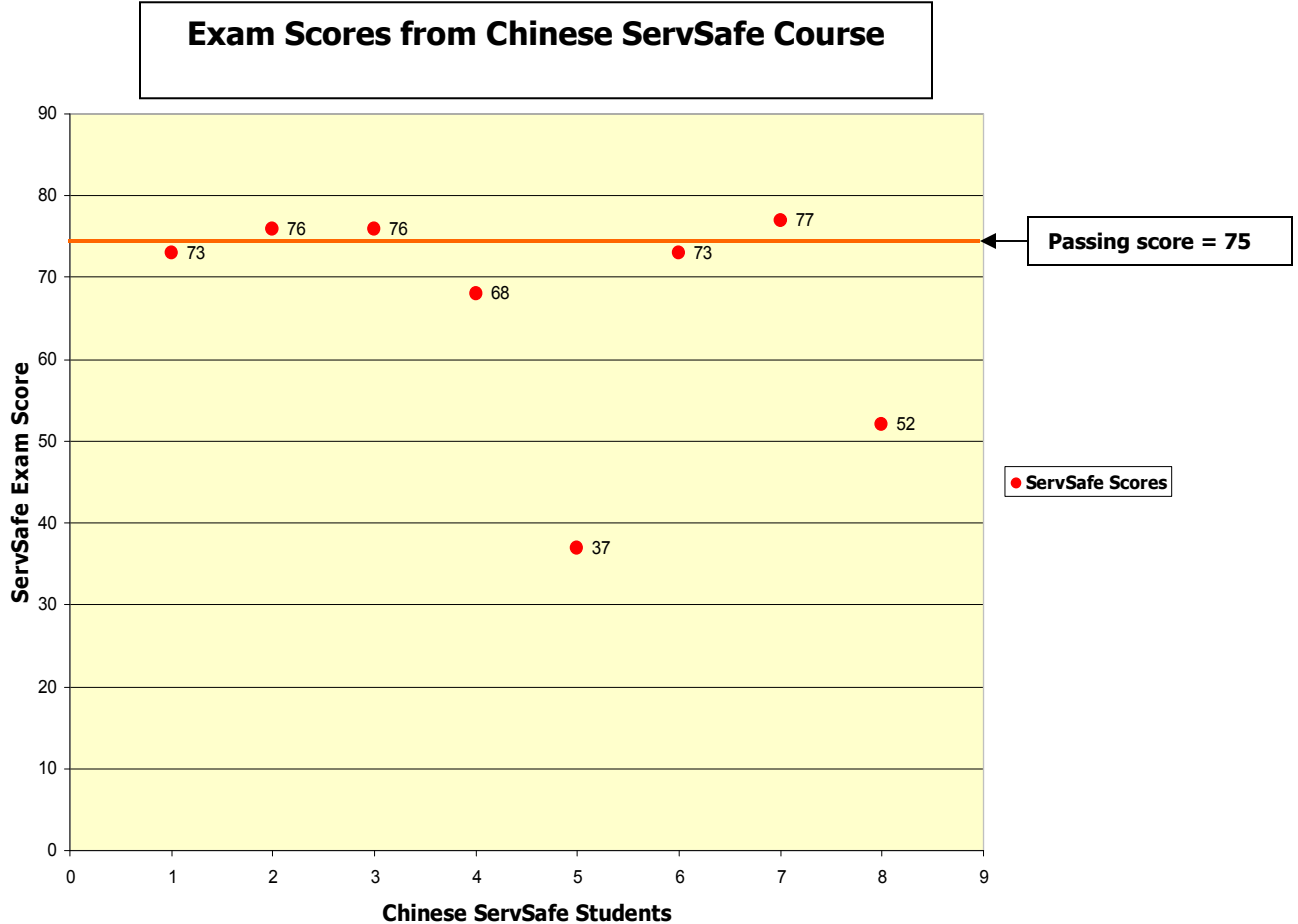


Figure 8. ServSafe exam scores from Chinese course

Problems Observed During ServSafe Course:

- Two of the students only attended the 2nd day of the course. They missed 6 hours of the 8-hour ServSafe course format.
- One of the students was a last minute substitution for a student who had a family emergency in another state. The substitute student did not have an opportunity to study the text book in advance.
- Most of the students had a difficult time understanding and completing the initial personal information required on the exam "bubble sheet." This fostered a concern that the students may have problems transferring answers to the exam form correctly.
- The exam results indicated that one of students received zero points. This only confirmed that at least this particular student had trouble with the "bubble Sheet" exam form. GTCHD had the student come back and take the exam again, but the student received 73% and failed.
- The small class size magnified any variation and therefore the statistical significance of the theory test is questionable. However, the mitigating factors must be explored.

Step Eight: Standardize the Improvement or Develop a New Theory

After the results were studied and proved the original AIM Statement had not been met, there was a realization that the root cause of the problem was still lingering. The QI Team did recognize that there were some great achievements that could be attributed to the QI project. A positive rapport was developed between GTCHD and owners/mangers/FS workers from Chinese restaurants. A survey of the students just before the ServSafe exam confirmed that the students were extremely grateful for the effort to provide training in their native language. However, as highlighted by the poor exam results, there are obviously other variables that are contributing to the low ServSafe passing rate among Chinese students. The GTCHD QI Team decided to develop a survey to distribute to all of the ServSafe students from Chinese restaurants whether they took the Chinese course or they took the course taught in English.

The initial draft of the survey was developed using a brain storming session during which the QI Team compiled a list of variables that may be affecting the passing rate among the Chinese students. As an added measure, the QI Team also used a fishbone diagram (Figure 9) to complete the survey. Several survey questions were derived from the fishbone.

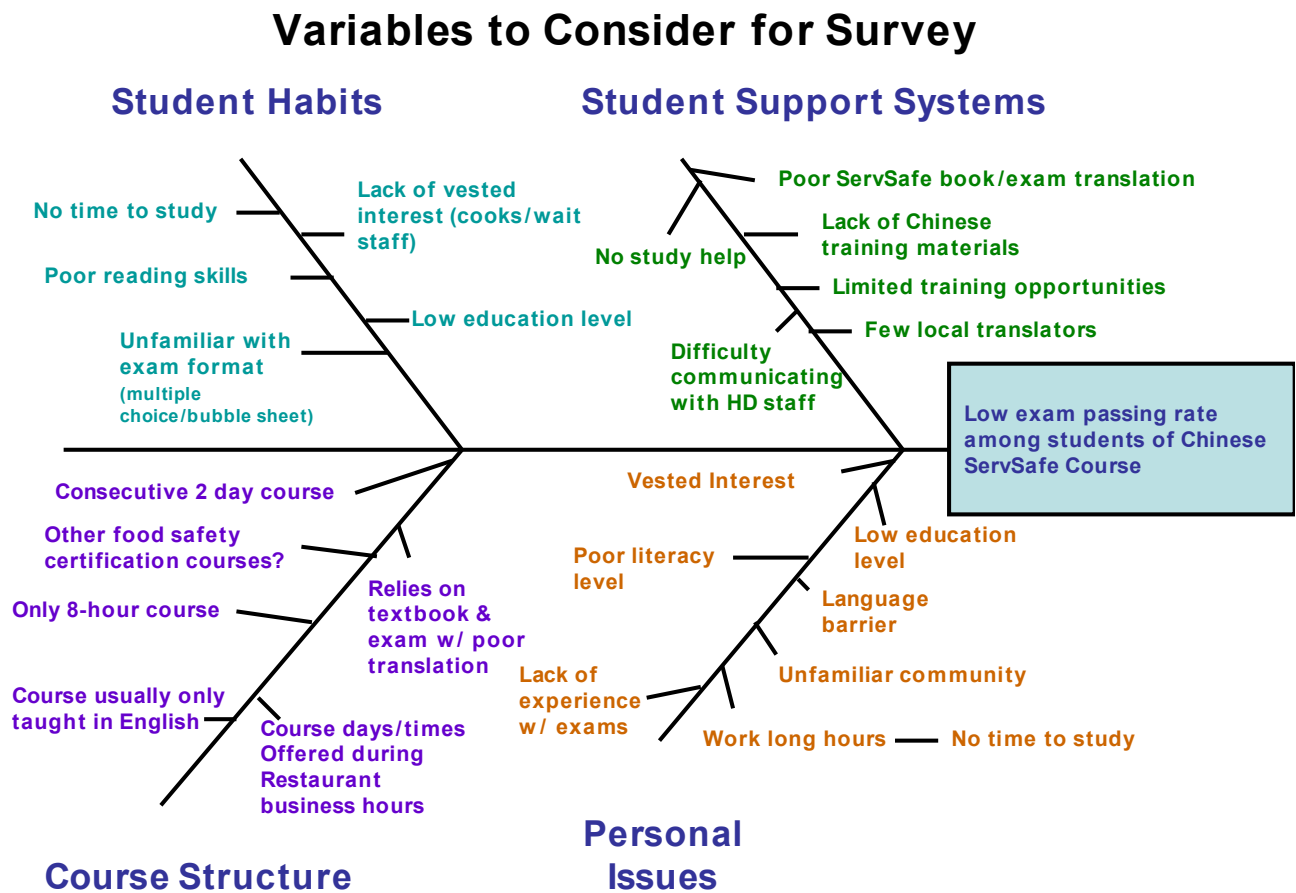


Figure 9. Fishbone to develop survey questions

After the survey was developed, it was then translated into Chinese by Jean Chang, Public Health-Muskegon County. The surveys were hand delivered to each student and then collected two days later with a 94% return rate. The answers to each survey question were compiled into six separate categories: Those who passed the English version of the course; those who passed the Chinese version of the course; those who failed each version of the course; and those who passed overall and failed overall. In an effort to find common factors, a Venn diagram (Figure 10) was constructed to compare those who passed the exam and those who failed.

Venn Diagram of Chinese ServSafe Student Survey Results

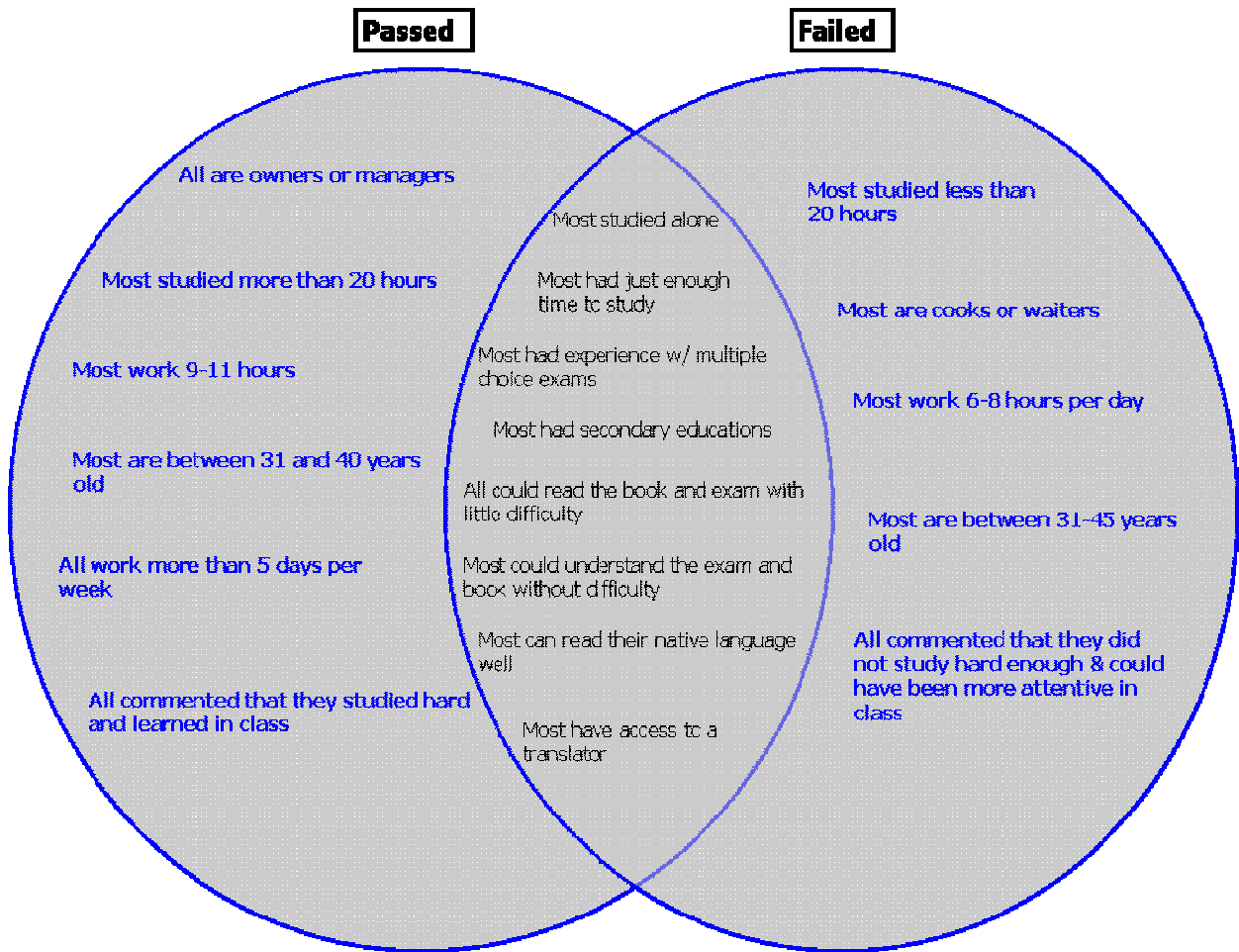


Figure 10. Venn diagram of survey results

An examination of the Venn diagram outlined similarities and differences between the two groups. The QI Team focused on the unique differences highlighted by the diagram. The fact that all those who passed were owners or managers indicates that “vested interest” may be a significant factor which can be linked to other factors identified such as study habits and work hours per day. Cultural differences or social class issues may be an issue which is not apparent

on the surface. Anecdotal information obtained from informal discussions with restaurant owners and discussions during the focus group indicated that many of the Chinese food service workers come from poor rural areas of China with minimal educational opportunities. In fact, the QI Team interpreter, Jean Chang, revealed that handwriting and grammar skills of those students who failed the ServSafe exam were generally more basic and elementary than those who passed the exam. These observations are difficult to confirm, but the combination of low education level and low vested interest may be a significant root cause of the low ServSafe passing rate. Vested interest may be a more significant variable than low education level. Some States require that all food service workers have a current "food handler's card," which is obtained after passing an approved training program. Workers then have a vested interest in passing the training course because their job is in jeopardy. Vested interest then overcomes the low education disparity. The food service worker will take extra measures to pass the course, i.e. seek a tutor, study harder, form study groups, etc. In Michigan, the food code only requires the person in charge to be certified. In order to effectively increase vested interest among Chinese food service workers, an incentive must be present.

Step Nine: Establish Future Plans

Initially, the effort to increase the ServSafe exam passing rate among Chinese food service workers seemed like it was going to be black and white. Provide training in the student's native language and they will be more likely to pass the exam. In reality, this QI project is not black and white but several shades of gray. The complexity of the potential root causes and their interrelationships have been both enlightening and perplexing. At this point in time, it is apparent that before any future plans are established, more work must be done. Also, the ultimate goal of increasing overall food safety knowledge and lowering the incidence of food borne disease must be paramount. Therefore, the following initial steps will be forthcoming:

- Meet with the Chinese restaurant owners and managers to present the findings of the QI project and discuss potential options for training
- Determine possible incentives for Chinese food service workers to participate in food safety training (i.e. increase vested interest)
- Establish AIM statement for new PDSA cycle

Closing Commentary

Initially, GTCHD QI Team was extremely disappointed not to meet the AIM statement and have an "unsuccessful" quality improvement project. However, after the team was able to really digest the results of the test and ponder all that had transpired, there was a realization that there were positive accomplishments and potential for real improvement. The QI Team did succeed in improving the relationship between the Health Department and the owners/managers/workers from Chinese restaurants. The Health Department's clients were genuinely pleased with the efforts to help them succeed. Also, a foundation of knowledge has been built regarding the cultural differences and complex relationships within Chinese restaurants. Truly, the needs of food service workers from Chinese restaurants are better understood now more than ever. Obviously, there is still much work to be done to achieve the ultimate goal of improving food safety in Chinese restaurants. Great potential exists to build on

the accomplishments and make some real improvements in the future to turn this experience into a true "success."

One of the most significant outcomes of this project is the paradigm shift that has occurred within the QI Team. Team members can no longer simply speculate or assume the origin of problems within their respective public health programs. Everything is now viewed through the lens of quality improvement. Involvement in the MLC-3 project has already changed the way things are being done within GTCHD. However, the new challenge is to maintain momentum in these times of tight budgets and increasing responsibilities. GTCHD QI Team will take these three steps to insure that quality improvement continues and grows within the organization:

1. Establish a committee within the administrative team to develop a department policy regarding quality assurance and quality improvement.
2. Establish a work plan to train supervisors, coordinators, and professional staff within specific programs.
3. Develop and prioritize future quality improvement projects within the Health Department. Mentor the staff involved.

GTCHD QI Team is convinced that if quality improvement is embraced within the Health Department, public health can only benefit. There is a steep learning curve when first encountering and working with quality improvement. However, like most things, over time the learning curve will diminish and quality improvement will be second nature.

Appendix

