A Web Portal for Bariatric Patients -- Effective Relationships Management

Sonya HY Hsu
Informatics Program
School of Computing and Informatics
Ray P. Authement College of Sciences
University of Louisiana Lafayette
SonyaHsu@Louisiana.edu

Abstract

Drawn upon patient relationship management, this project focuses on increasing effectiveness of weight loss surgery by managing the relationship between patients and physicians through a Web portal. Data collection from bariatric patients and some discussion among physicians and advisory teams provide some basis for Web portal content. Iterations were and will be made based on the collected data from users. Bariatric patients prefer getting information from physicians and online sources; however, they do not use online WLS resources or websites. The content they would like to access are medical information about WLS, then nutrition and exercise. The supports they prefer to obtain are from family, friends and coworkers. This may lead to unsuccessful support group meetings. Suggested either trust or information overload issue needs to be dealt with.

1. Introduction

Electronic health records (EHR) have drawn a lot of attention in the United States because of the recently announced “meaningful uses” of information technology (IT) initiatives by the U.S. Department of Health and Human Services (DHHS). The implementation of meaningful uses in health IT in an aggressive timeline under standards and guidelines certified by the DHHS will be rewarded with generous incentives. EHR and any other kinds of electronic documents, such as electronic prescription, patient history, medicine dispensary, should speed up the transmission and more importantly, decision-making of patients’ treatment. This is a perfect scenario that is supposed to be in practice. Still, many questions remain. How important is IT in the delivery of information from medical practices to their patients? How does IT assist information sharing between medical practices/hospitals and offer treatment according to patients’ history? How confident are patients in the treatment given by medical professionals? On the other hand, do patients always know what is necessary to take care of themselves? Or, do they have to trust advice offered by the physician during a 10-30 minutes visit.

Not only do EHRs accelerate the transmission of patients’ records, lab tests and previous diagnosis between local hospitals and community health clinics, they also streamline the clinical decision-making processes to save time and cost. There is evidence that EHR reduces errors. For example, the Institute of Medicine (IOM) in the U.S. advocated adoption of computerized physician order entry to reduce errors. In 2009, the American Recovery and Reinvestment Act (ARRA) issued the financial incentives for hospitals to become meaningful users of health IT [8]. As noted by IOM's Committee on Quality Health Care in the United States, “Information technology must play a central role in the redesign of the health care system if a substantial improvement in quality is to be achieved over the coming decade.”

The use of IT in healthcare industry remains constant medical practice that provides proficiency needed to run day-to-day operations. IT uses also become a foci of innovating medical practices and patient cares. While many academic research projects have been contributing to this topic, very few claim a research focus on the patient side. From proactive perspective, the patients should be the ones to understand their physical condition(s) more than their physicians, and they could share their knowledge with their physicians and actively participate in the planning of their treatment(s).

Using Customer Relationship Management (CRM), healthcare institutions may be able to more effectively and efficiently establish long-term interactions with their patients. CRM can be used to promptly provide services that meet the current and future needs of patients effectively as well as improve healthcare service quality. The value added benefits of information sharing between medical providers and patients can potentially lead to increased patient satisfaction and wellness.

Patients may pay more attention to their health records if the electronic versions are available to them.
On the other hand, if healthcare providers are more proactive in increasing their patients’ well-being, then providing more useful information on an “as needed” basis would be an attainable goal for both health providers and patients. Evidence-based health care can apply to the providers as well as to the patient side. The more understanding patients have of their health conditions the better decisions they can make for themselves.

The main purpose of this research is to collect users’ requirements from different sources, patients, physicians, and professional teams that interact with the patients before and after bariatric surgery. This project also intends to increase bariatric patients’ self-efficacy and self-control of their health at all time. From the delivery of information, resources, connectedness for patients whenever and wherever they need them and an alternative to the “traditional” one-on-one, one-to-many, and face-to-face support services offered by most bariatric physicians, this research proposes an online support system to facilitate patient recovery from bariatric surgery.

2. IT infrastructure and evidence-based practice

EHR is a set of applications that includes a computerized patient record with a clinical data repository and some clinical support capabilities. Clinical decision support provides treatment recommendations based on patient-specific clinical information and treatment guidelines. Health IT has been identified as one of the most prominent, contemporary catalysts for improving patient safety and reducing subsequent harm to patients receiving health care [4].

To make significant progress for healthcare reform as advocated by the Obama administration, a major re-engineering of health care delivery system is needed [10]. The required changes may extend beyond the technical into other components such as sociological, cultural, educational, and financial. More specifically, Ortiz and Clancy [10] recommended the use of IT to improve access to information and support evidence-based decision making. Goldzweig et al. [6] suggested that accelerating the adoption of health IT will require greater public-private partnerships, new policies to address the misalignment of financial incentives, and more robust evidence based medical services.

Health IT, such as computerized physician order entry and electronic health records, has the potential to improve the quality of health care [8]. According to their research results, the use of computerized physician order entry and EHR resulted in significant improvements in two quality measures – pneumococcal vaccination and appropriate antibiotic for treating pneumonia patients, with larger effects in academic hospitals [8].

One of the requirements of meaningful health IT is to utilize a certified EHR to connect and exchange health information, such as promoting care coordination [2]. Medical service providers need access to the data in patient healthcare records to make decisions that provide the type of high-quality services which lead to successful medical treatments. The study of Poston et al. [11] summarizes the data accuracy and data availability problems that exist in managing healthcare records and describes various technology solutions that could be designed to apply specific health IT needs.

EHR allows medical providers to store and exchange patient information. However, hospitals need assurance that their patients’ records remain confidential, as required by law. Then hospitals may be more likely to adopt electronic medical records (EMR). Alternatively, privacy protection may inhibit adoption if hospitals cannot benefit from easily exchanging patient information [9]. Miller and Tucker [9] found a reduction of 24% in EMR adoption by hospitals when state privacy regulations restricted hospital release of health information.

3. Patient relationship management

From a long-term relationship point of view, CRM or patient relationship management (PRM) promotes interactions between patients and healthcare providers. Access to a patient’s cumulative medical record information can be a start of the communication between medical provider and patient. Also, transparent access to health information may increase patient satisfaction on their care. A continuous relationship with patients could enhance patient evaluation of the care received. If healthcare providers maintain good communication with patients, in addition to collecting information about patients, they not only gather important information for improving quality care, but also help patients feel “important” [3]. The gathered information and feedback can be used to make decisions on providing need-based services with correct remedies at the right time with friendly reminders built in. In other words, the patients remain “in control” to their own health.

In a similar vein, Füller et al. [5] studied consumer empowerment via co-creation of new product development between producers and consumers. In this context, empowerment refers to how the new technologies enable people to interact with the world on personal, dyad, group, or community levels and to collaborate and achieve what they could not before [1]. Shankar et al. [12] argued that the Internet provided a
medium to demonstrate consumer creative empowerment by expressing their own opinions and observations about any matter relevant to them.

In new product development, consumer empowered by Internet had two fold benefits. The first is to maintain self-identity and learn/interact with others as the process goes along. The second is to strengthen a person’s experience of self-determination and self-efficacy [5]. There are numerous tools available via computer-mediated communication to enhance users’ self-efficacy and self-determination. Web-based tools allow consumers to be proficient enough to actively participate in designing their own products according to their needs. With much empowerment, consumers would not only be willing to participate in the future development projects but also enjoy their creation because their participation in the process [14].

In the context of healthcare, the patient relationship management (PRM) has a similar strategy as in CRM. With either evidence-base practices or shared information between physicians and patients, the purpose of PRM is for both sides to manage and prevent diseases. Medical service providers supply better quality care while patients have better well-being. If all the data collected from patients can be analyzed appropriately via multi-dimensional analysis technologies, medical service providers can provide closer relationships, personalized medical services, and two-way communication [7]. From a PRM perspective, Vardasca and Martins [15] developed a framework to better serve patients with different modules. The effective PRM system should integrate all related electronic documents in one place; provide personalized services, such as alert service, waiting time display, clinical data entry, appointments management, patient portal, etc.

4. A Web portal for bariatric patients

Anything about weight loss is tagged with a price and it is multi-billion industry including vitamin, drug, surgery, online information and such. Bariatric patients are those who undergo Gastric bypass, which is a reliable weight-loss operation. This kind of operation can lead to significant and sustained weight-loss by reducing food intake and food absorption. Through close follow-up before and after surgery, bariatric patients can prevent some short and long-term risks associated with the surgery. Like any weight-loss operation, bariatric patients are encouraged to combine Gastric surgery with a multi-disciplinary program that focuses on lifestyle and behavioral changes, such as exercise, nutritional meals, stress management and such.

Information about weight loss surgery (WLS) can be daunting. Moreover, a lot of information is either deceptive or oversold. Some bariatric patients have the medical procedure without much information except that provided by the physician’s office. The after surgery process, especially, is a long winding road. If patients do not follow the diet, exercise, and psychological recommendations prescribed by their physician, they may need to go back to the very start of the process. Four areas of information are essential to bariatric patient success and should be available on a WLS portal:

1. Medical: Surgeons would be able to answer and ask questions and should visually present the Who, What, Why, When, How Much aspects of successful outcomes. Surgeons generally classify their patients as being pre-surgery or post-surgery (3-6 months, 6-9 months, over one year, and 1-2 years), and use these classifications in determining the type of care and support provided.

2. Nutritional: Nutritionists could ask/answer questions, provide resources, recipes, visually show amounts, and coach on food consumption. Additionally, a BMI calculator would allow patients to track progress to their ultimate goal.

3. Physiological: Exercise demos, charts, motivation, apps, Q&A on “What’s happening to my body and why” type questions can provide encouragement to patients in this important aspect of their recuperation.

4. Psychological: Counselors and other resources could provide insights, readings, exercises, behavior modification modules, relationship, and stress management techniques to assist patients in understanding and coming to terms with the physical and emotional challenges they face.

The information shared with the patient should be trusted, correct, exhaustive and up-to-date. It is the goal of this project that iteratively gathering feedback from patients, the information provided on the web portal will be meaningful and useful.

Table 1 presents survey results that show the dramatic decrease in the instances of several diseases complicating the health of obese people. The data was provided second-hand by a medical group involved in bariatric surgery. These results indicate that medical factors other than obesity need to be considered when discussing “success” of WLS. Some bariatric patients require further surgeries, such as gallbladder removal (39.75%), internal hernia or bowel obstruction (40.9%) or other procedures as a result of the WLS. Information needed by the WLS patient can range from complex and specific to simple and general in nature.

To make this type of information available in a web portal, the requirements must be collected from bariatric patients, medical service providers and support teams.
User engagement in the design process increases accuracy of information about users’ tasks and gives more opportunity for users to influence design decisions [13]. These results lead to a better designed system as well as increasing the potential for user acceptance and implementation of the final system.

Like any other kind of chronic illness, support groups for bariatric patients are extremely helpful to keep health and target weight loss on track. However, as observed by many WLS support teams, face-to-face support groups are not well attended. Lack of users’ engagement in any aspect of support may be counterproductive to the weight loss journey. Some of the questions this research project hopes to answer are: What are the reasons that bariatric patients ignore the support system? Will online interactivity encourage patients’ involvements? The online activity can be real-time chat, discussion, online support group, Webinar, video streaming and social media interactivity.

### Table 1. Health condition before/after WLS surgery

<table>
<thead>
<tr>
<th>Health conditions</th>
<th>BEFORE WLS</th>
<th>AFTER WLS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>count</td>
<td>percent</td>
</tr>
<tr>
<td>Diabetes</td>
<td>79</td>
<td>29.2%</td>
</tr>
<tr>
<td>Kidney conditions</td>
<td>152</td>
<td>56.2%</td>
</tr>
<tr>
<td>Sleep apnea</td>
<td>108</td>
<td>40.0%</td>
</tr>
<tr>
<td>Joint problems</td>
<td>137</td>
<td>50.75%</td>
</tr>
<tr>
<td>High cholesterol</td>
<td>109</td>
<td>40.3%</td>
</tr>
<tr>
<td>Heart burn</td>
<td>99</td>
<td>36.6%</td>
</tr>
<tr>
<td>Bladder control</td>
<td>56</td>
<td>20.7%</td>
</tr>
<tr>
<td>Heart failure</td>
<td>8</td>
<td>2.9%</td>
</tr>
<tr>
<td>None</td>
<td>31</td>
<td>11.4%</td>
</tr>
<tr>
<td>Total</td>
<td>270</td>
<td></td>
</tr>
</tbody>
</table>

1. Before and after WLS, the health conditions are “checked that all apply;” therefore, the total percent exceed 100%.
2. The total number of participants for before WLS is 270, after WLS is 241.

Through some exhaustive research on the Internet, several discussion sessions with bariatric patients, physicians and some professionals involved in WLS support, the preliminary content of a Web portal is established as shown in Appendix C. This Web portal has two main goals: (1) provide bariatric patients a reliable clearing house of information; (2) offer personalized and interactive access to information that may lead bariatric patients to a healthier life style while reducing their costs and decreasing the time required to pursue such well-being. The personalization feature of the Web portal will be developed in the second phase of the project and will be based on medical information provided by the patient.

The Web portal contains the following but not limited to:
- FAQs grouped by topic/phase of journey/depth of information needed
- Interactive Q&A (Ask the Doctor, How to hints from the Nutritionist, What about…)
- Downloadable PDF charts, posters, motivators, progress sheets
- Podcasts – video and audio formats from experts in WLS care and support (nutritionists, physiologists, psychologists, surgeons, and other medical support staff)
- On-line journal for recording food, stressors, successes and exercise
- Integrate Strengths and Well Being information though modules
- Webinars targeted to specific groups – these could be archived for on-demand playback
- Small on-line groups with video/audio so patients with similar surgeries/ time out from surgery/ specific topics could have their needs met.
- Face-to-face consulting, conferences focusing on specific target topics. (These could be produced for a live experience and recorded for playback for reinforcement and review)
- Display on mobile devices

5. Research Method

The focus of this research project is to collect users’ requirements for bariatric patient care. The unit of analysis is twofold: bariatric patients in Texas and patient advisory teams in one research hospital. A patients’ support team is comprised of medical staff, physiologists, psychological professionals and nutritionists.

The first round of data collection focuses on bariatric patients in Texas and their medical support team. This data collection is concerned with gathering information on the types of support to be provided in the Web portal. The first round of surveys (refer to Appendix A) to the patients was distributed online to 3000 subjects in Texas. Out of 3,000 subjects, there were 344 valid responses. The data collection was conducted from November 15, 2011 to December 15, 2011, with three email blasts to the Bariatric patients. The collected data was offered as descriptive statistics listed in the appendix A; both quantitative analysis and qualitative summary are explained in the results section. The research focus
identify what content will fulfill the users’ (i.e. bariatric patients and their support teams) requirements.

The Web portal will be created preliminarily, and it will be continuously improved on based on ongoing surveys of the various users’ groups. Data will be collected from bariatric patients, their surgeons, physicians, other professional support team members, and the bariatric community.

6. Results

Appendix A presents simple descriptive statistics. Out of 345 valid responses, most subjects had Gastric Bypass (76.7%), and they were over one year post surgery. As shown in Table 2, respondents prefer that information on nutrition (mean = 4.41 out of 5.00), medical information of WLS (mean = 4.32), exercise (mean = 4.12), and food preparation tips (mean = 4.02) be presented in the Web portal. The respondents, when asked about the content of medical information of a WLS, responded that content regarding metabolism issues (mean = 4.41 out of 5.00) was most needed, with vitamin deficiencies (mean = 4.32) a close second (refer to Table 3).

### Table 3. Interests in medical side of WLS

<table>
<thead>
<tr>
<th>Interests in topics</th>
<th>Mean*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foot and podiatry issues</td>
<td>3.00</td>
</tr>
<tr>
<td>Knee and back problems and solutions</td>
<td>3.67</td>
</tr>
<tr>
<td>Heartburn problems and solutions</td>
<td>3.31</td>
</tr>
<tr>
<td>Revision questions and answers</td>
<td>3.45</td>
</tr>
<tr>
<td>Metabolism issues (how to burn calories)</td>
<td>4.41</td>
</tr>
<tr>
<td>Bladder Problems</td>
<td>3.30</td>
</tr>
<tr>
<td>Vitamin Deficiencies</td>
<td>4.32</td>
</tr>
</tbody>
</table>

*1 = definitely no interest; 5 = definitely interested

Only 13.6% of 345 respondents attend a WLS support group. The respondents who attended support groups enjoyed the information distributed (mean = 3.94 out of 5.00) and sharing of experiences from the community (mean = 3.66). Among those that did NOT attend WLS support group, the primary reasons given were: distance (51.9%), time (41.7%), convenience (30.2%) and unaware when/where they meet (20.3%) (refer to Table 4).

### Table 4: Attending WLS support group

<table>
<thead>
<tr>
<th>Attending WLS support group/reasons</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Getting information</td>
<td>3.94⁴</td>
<td>7.5%²</td>
</tr>
<tr>
<td>Meeting the community</td>
<td>3.66⁴</td>
<td>41.7%²</td>
</tr>
<tr>
<td>Distance</td>
<td>51.9%²</td>
<td>51.9%²</td>
</tr>
<tr>
<td>Cost</td>
<td>7.5%²</td>
<td>7.5%²</td>
</tr>
<tr>
<td>Time</td>
<td>41.7%²</td>
<td>41.7%²</td>
</tr>
<tr>
<td>Convenience</td>
<td>30.2%²</td>
<td>30.2%²</td>
</tr>
<tr>
<td>Unaware of meeting</td>
<td>20.3%²</td>
<td>20.3%²</td>
</tr>
</tbody>
</table>

⁴Mean 1 = definitely no interest; 5 = definitely interested.

²The choices of NOT attending the support group are “checked that all apply;” therefore, the total percent exceed 100%

When asked why or why not attend the support group, they replied:

*Comments on attending support group:*
- Absolutely. I would find the information informative and supportive in my journey
I would like to see if others are going through what I am going through; see if there are any new things happening, etc.

When I first had surgery, the xxx patients had a yahoo group that was AMAZING!! It was helpful in more way than I can list. I would LOVE to have something like that again...if it still exists. PLEASE LET ME KNOW how to access it!

Because I want to stay inform of any new information that would help me stay healthy.

I am interested in finding out about the latest information for post-op patients.

"That would be an effective way for me to participate with others."

Comments on NOT attending support group:

- I don't think my problems would be addressed.
- It depends on content, confidentiality, and it also depends on other users that have had weight loss surgery. Sometimes people on the internet are very rude because you aren't face to face with them.
- I would enjoy a support group like that as time permitted me to do so.
- I don't interact with others on the computer because I am afraid of some of the people out there. It might be okay if I knew all the other people were weight loss people and not interested in stealing identity or information, or doing harm to someone.
- Priorities make it a maybe or maybe not situation, depending on my schedule and how useful it will be to me personally.

Most information obtained for the healthy WLS life was from the doctor (69.1%) and online (64.1%) resources; subsequently from nutritionists (29.2%), magazines (25.4%), books (17.6%), and lastly support groups (12.8%). The support, WLS patients mostly received from family (79.6%), Friends (63.8%) and coworkers (32.2%) and lastly church (14.5%). When asked whether use online WLS resources or Websites, only would 43.1% of participants would. There is a deviation from “search” information and “use” the searched information. The deviation may be caused by trust issues related to website use, information overload or some other reasons. Many websites may offer misleading information that cause patients’ unfavorable consequences, such as the health-related issues from receiving misinformation about types of foods they can eat, loss of time, money or advice that sends them off-track from a health living style. On the extreme side, it may take too much time for patients to understand or walk through detailed information on different aspects of their post-surgery journey, such as medical, nutritional, psychological and physiological information. The information search to behavioral intention mismatch may be caused by a change of heart or there being too much information to go through.

One result worth mentioning is the support effort which this Web portal is intended to provide. From the physicians’ point of view, the bariatric patients, especially after WLS surgery, receives the best support from group meetings. The hospitals and physicians’ offices make great effort to create and maintain support groups. However, patients primarily turn to their family, friends, and coworkers for support. It seems the circle of

7. Discussion

The preliminary Web portal design was created with input from bariatric patients, physicians, nutritionists and other professional teams. The survey results presented above provide some general insights into content desire for the Web portal. Surprisingly, the physicians are as an important a source of information as online resources that bariatric patients search information for. However, when asked if they would use online WLS resources or websites, only 43.1% of participants would. There is a deviation from “search” information and “use” the searched information. The deviation may be caused by trust issues related to website use, information overload or some other reasons. Many websites may offer misleading information that cause patients’ unfavorable consequences, such as the health-related issues from receiving misinformation about types of foods they can eat, loss of time, money or advice that sends them off-track from a health living style. On the extreme side, it may take too much time for patients to understand or walk through detailed information on different aspects of their post-surgery journey, such as medical, nutritional, psychological and physiological information. The information search to behavioral intention mismatch may be caused by a change of heart or there being too much information to go through.
family, friends, and coworkers could offer immediate support that patients need. On the other hand, online support groups can be offered in an asynchronous “social media” format that will provide flexibility they need and desire.

As expected, the content of Web portal can be modified over time by responses from ongoing surveys. The bariatric patients need medical information the most, followed by nutrition, exercise, and food preparation tips. These are four areas emphasized in the initial mock-up website created. In the medical area, patients are particularly interested in metabolism issues and vitamin deficiencies. These contents will be further developed and incorporated into next iteration of the website.

8. Research Limitations

This paper presents results from Phase 1 of a six-phase project. While the initial survey provided a foundation to design the preliminary website, it is anticipated further modification and refinement of the website based on ongoing data collection. The remaining phases, some in progress, are:

Phase 2: Content analyses of websites visited by patients.
Phase 3: Data collection from medical advisory teams using the in-depth interview protocol listed in the Appendix B (in process).
Phase 4: Modify the Web portal (refer to Appendix C) based on results of Phase 2 and Phase 3.
Phase 5: Usability testing on the Web portal with bariatric patients and medical advisory team.

There are preliminary discussions with bariatric physicians and their advisory team. Based on the interview protocol listed in the Appendix B, more systematic collections are also planned. After data analyses from the second and third phases, the Web portal will be modified and released to select medical groups.

One feature of the Web portal is that patients will receive an account login from their physician so that personalized information and tips can be offered, depending on where the patient is in his or her weight loss journey. This will have to handle with great care so as not to violate medical, legal or HIPAA compliance regulations. The personalized account may serve as a clearing house of information to that individual and include medical history, diary of food intakes, exercises schedule, BMI index, and so on. With authorized viewing for the medical and advisory teams, the patient can receive individualized advice.

While a general Web portal for WLS patients can be created with some work, it is the goal of this project to provide a portal that provides information and support tailored to patients of participating medical groups. This will be a lengthy process because of the iterative approach to website design as well as because of privacy issues.

9. Managerial Implications

This project intends to increase quality care of bariatric patients by improving effective communication between the medical/advisory teams and the patient community. Patients’ engagement can lead to quality and safety improvements. Setting up this Web portal or clearing house of information for Bariatric patients, the intention is to provide a two-way communication channel that enhances problem solving by enabling it to occur in real-time (synchronously) or off-line (asynchronously), without having to wait until next doctor’s visit.

This project focuses on increasing effectiveness of weight loss surgery by managing the patient-physician relationship with social interactive media. The communication policy should be carefully drawn and enforced in the online community. While researching for solutions to issues related to their weight loss journey, patients increase self-efficacy and self-control relating to their health. These proactive attitudes, in turn, lead to a better performance by the medical service providers. This leads to a win-win situation.

10. References


Appendix A: Patient Survey

1. Type of surgery:
   - Gastric Bypass 76.7%
   - Gastric Banding 13.0%
   - Gastric Sleeve 10.4%
   - Revision Surgery 8.7%

2. At what phase of the WLS process are you:
   - Pre-op 6.0%
   - Post op: up to 1 year 19.7%
   - Post op: more than 1 year 74.2%
   - I am ________ years and ________ months post-op.

3. Gender:
   - Female ________ 84.6% Male ________ 15.3%

4. Age: Age at time of surgery ________

5. I would like to know more about: Please rate your interest in the topics below (1=Definitely no interest to 5=Definitely interested)
   - Mean = 3.84 Stress Management (how to deal with stress)
   - Mean = 4.41 Nutrition (vitamins, proteins, etc)
   - Mean = 4.12 Exercise (how to exercise)
   - Mean = 3.99 Emotional side of WLS (feeling of self-esteem, self-control)
   - Mean = 4.32 Medical side of WLS
   - Mean = 4.02 Food Preparation Tips
   - Mean = 3.83 Social Support Resources (what/where to get what you need, who to see)
   - Mean = 3.19 What to expect/pay attention to during first 6 months after WLS
   - Mean = 3.92 What to expect/pay attention to after the first year after WLS
   - Mean = 3.92 Plastic surgery options

   Other interests:

6. If interested in the medical side of WLS, what would you like to know more about? (1= definitely no interest to 5=definitely interested)
   - Mean = 3.00 Foot and podiatry issues
   - Mean = 3.67 Knee and back problems and solutions
   - Mean = 3.31 Heartburn problems and solutions
   - Mean = 3.45 Revision questions and answers
   - Mean = 4.41 Metabolism issues (how to burn calories)
   - Mean = 3.30 Bladder Problems
   - Mean = 4.32 Vitamin Deficiencies

7. Do you attend a WLS Support Group
   - If Yes – how often? 13.6% Monthly
   - 3 to 6 months
   - 1 week/year
   - Once a year
   - Why? ____________
   - If No – why not? (select all that apply) 85.2%
     - Distance 51.9%
     - Cost 7.5%
     - Time 41.7%
     - Convenience 30.2%
     - Unaware of when/where they meet 20.3%
     - Other 16.7%

8. In terms of a support group (1=Definitely no interest to 5=Definitely interested)
   - Mean = 3.94 I’m interested in getting information.
   - Mean = 3.66 I’m interested in meeting people who are experiencing the WLS journey.

9. Where do you get your information for living a successful, healthy WLS life? Check all that apply:
   - Doctor 69.1%
   - Nutritionists 29.2%
   - Support Group 12.8%
   - On-line: 64.1%
   - Which sites:________________________
   - Television Shows 15.4%
   - Which ones:_______________________
   - Books: 17.6% __________
   - Magazines: 25.4% __________

10. Are you receiving support for your Weight Loss journey from (select all that apply):
    - Family 79.6%
    - Friends 63.8%
    - Church 14.5%
    - Co-workers 32.2%
    - Other 15.4%

11. Do you have access to a computer?
    - Yes 97.6% No 1%
12. Do you have internet access?
   ___ Yes 96.8% – Continue with question 13
   ___ No 1% – Continue with question 15

13. If yes, how do you typically connect to the Internet?
   ___ Dial-up 2.6%   ___ High speed (DSL, Cable, Satellite) 95.2%   ___ Mobile device 34.9%

14. Where do you typically access the Internet?
   ___ Home 93.5%   ___ Work 35.5%   ___ Public (e.g. Library or Community Center) 2.9%   ___ Mobile device 34.1%

15. Do you use online WLS resources or websites
   ___ Yes 43.1% – Continue with question 16
   ___ No 56.5% – Continue with question 17

16. Which Websites:

17. Would you be willing to log in to a web-based State-wide WLS support program provided by your surgeon?
   ___ Not at all 3%
   ___ Seldom 4%
   ___ Occasionally 32%
   ___ Often 37%
   ___ All the time 24%

18. Would you prefer a web-based format where you would: (Please rank preferences where 1=Least Preferred and 4=most Preferred)
   Mean = 2.70 Just watch like a TV program or lecture
   Mean = 2.82 Interact, text in questions to speaker, but not live
   Mean = 2.37 Participate in live blog-type session with texted questions and answers
   Mean = 2.11 Have a live chat with actual questions via voice

19. How would you typically want to access an online, state-wide support group? (Please rank preferences where 1=Least Likely and 3=most Likely)
   Mean = 1.22 Log in to a website to watch a program at a specified time and day
   Mean = 2.48 Log in to a website, but watch the program whenever I choose
   Mean = 2.30 Be able to watch both "live" and "older" programs

20. What kind of information do you expect to get from the online support program?

21. Would you return to the state-wide Support Group Website for blogging and posting in between formal support programming? Why?

Appendix B: Medical Advisory Team
Interview Protocol

1. In which WLS support area do you currently work?
   a. Doctor
   b. Nurse
   c. Nutrition
   d. Physical
   e. Psychological
   f. Other

2. Within your job descriptions, what responsibilities are undertaken by you related to WLS?
   ___ Face-to-Face one-on-one appointment
   ___ Face-to-Face support group meeting
   ___ Email
   ___ Telephone
   ___ Online chat
   ___ Other

4. Do you feel that a website can be a viable support tool for WLS patients? YES  NO
   a. If yes, why?
   b. If no, why not?

5. Which, if any, websites do you recommend for WLS patients?

6. What kind of information do you think a website should offer WLS patients?

7. What kind of support groups do you know about/of?
   a. Which one will/would you recommend?
   b. What kind of information or discussion content should be included in the support group?

8. How long have you worked in a WLS program?
   years _____ months

9. How long have you worked in your current WLS practice?
   years _____ months

10. How long have you worked in the medical field?
    years _____ months

11. Prior to working a WLS practice what was your medical background?

12. How do you keep current in your medical professional practice? YES  NO
    a. Do you have on-the-job-training?
    b. Do you participate in Continuing Medical Education (CME)?
    c. Other: ___________

13. When you have questions related to WLS, what sources do you use to search for answers?

14. Do you maintain ongoing relationships with your WLS patients? YES  NO
    a. What do you do to maintain this relationship?
    b. What is done to recapture a patient that has quit coming or is non-compliant?

15. Do you document your conversations with your WLS patients? YES  NO
    a. If yes, how?

16. Why do you think patients don't participate in support?

17. At what point do you feel a patient doesn’t need further support?

18. What does your medical team do to create an effective support environment for your WLS patients?

19. When is the optimum time to remind patients about support group meetings?

20. In your opinion, is “free” a deterrent to people attending support groups?

21. In your opinion, what is the most effective way to get people to participate in a support program?
Appendix C: Web Portal for Bariatric Patients