Creating An Intervention to Reduce Medical Errors:

A Novel Social Marketing Approach

The foundation of the social marketing approach is the understanding that social change ultimately arises from decisions made by individuals within the context of their community setting. It is not merely the application of tricky marketing techniques, although the field of marketing does lend proven methods for achieving consumer behavior change to the approach. As stated in The Manager’s Guide to Social Marketing, social marketing “provides a framework for understanding your target audience’s behavior and where best to intervene for positive behavior change.” ¹

In seeking to achieve true social change thorough a planned behavioral intervention, the development of a targeted and integrated approach is critical. As in commercial marketing, application of the four “P’s” - Product, Price, Place, and Promotion - are central to the social marketing approach, along with the additional “P” of Policy. The social marketing approach can be useful in targeting behavior change in many areas of human behavior. For example, it might be used to garner support for environmental protection legislation, to address workplace discrimination, or raise awareness of unacceptable spousal behavior.

The social marketing approach can be extremely helpful in creating programs related to health behavior changes, and the Healthy People 2010 goals include updating communication strategies for implementation of public health agendas. ² However, the social marketing approach can be confused with public service advertisements, health information communication, medical services advertising, or community health messages. For some, the idea of applying marketing methods to achieve health behavior changes might be viewed as a covert- and maybe even an
unscrupulous intrusion of Madison Avenue into the more altruistic goals of community health. To add to the confusion, the Centers for Disease Control and Prevention (CDC) has a Health Communications Unit which uses many methods of health communication, including support for the social marketing approach, in some of their initiatives.  

For example, one of the CDC’s goals is to encourage pre-teens to become more active. A campaign was created to take advantage of this age group’s shared experience of popular Saturday morning cartoon learning spots. Thus, a campaign was developed called “VERB- it’s what you do.” Another very effective campaign that is currently being conducted is known as the “TRUTH” campaign, which discourages young persons from starting to smoke cigarettes by highlighting the unscrupulous motives of the cigarette companies toward their age group.

As a result of this mixing of terminology and methods, it’s not hard to see why the social marketing approach might be deemed too difficult to understand or use. To address this need for clarification, the Robert Woods Johnson Foundation funded the Turning Point initiative. In the mid-1980s, the Social Marketing National Excellence Collaborative published a series of Social Marketing Manuals. In addition, an electronic step-by-step program for organizing and implementing a successful social marketing program was created called CDCynergy. With these tools, public health researchers are more able to successfully navigate the crowded waters of health behavior intervention methods.

The success and cost-effectiveness of well-designed social marketing campaigns has created interest among many groups creating behavior interventions in the health care setting. One area where public health leaders could champion the use of the social marketing approach is an intervention to reduce medical errors in hospitals across the country and the world. The recently
published study of a successful intervention for the reduction in surgical errors using a simple check-off sheet provides an excellent opportunity for discussion of social marketing concepts. While not strictly a health behavior intervention, the checklist intervention is a behavioral intervention to achieve higher levels of surgical safety, and is suitable for using a social marketing approach to implementation. The CDCynergy model, while designed with health behavior interventions in mind, is also easily adapted to health care procedures related to health promotion interventions involving the redesign of human engineering methods, such as the reduction in medical errors by changing operating room procedures.

Using the CDCynergy model, creating a social marketing campaign for achieving a reduction in surgical errors is simple to organize into basic, logical steps of planning, action and evaluation. The model breaks the process into several phases: Phase 1, Problem Description; Phase 2, Market Research; Phase 3, Market Strategy; Phase 4, Intervention; Phase 5, Evaluation, and Phase 6, Implementation. Each phase is broken into discrete steps with guiding questions. As each phase is completed, there are opportunities to go back to previous phases to make adjustments based on new information.

For the purposes of this paper, the first three phases of CDCynergy are completed in detail. Where secondary sources were available they are referenced. However, some details and conclusions were made hypothetically based on reasonable assumptions, as actual focus groups were not conducted, and these are noted as such. At certain steps, relevant reflections are included to impart some insight into the creation of the public health vision and mission, and the underlying public health leadership concepts inherent in the design of this behavioral intervention. The last three phases of CDCynergy that outline the actual intervention,
implementation, and evaluation details are summarized. Finally, concluding remarks outlining future steps to be taken to complete the program are included.

**A Social Marketing Approach to Creating a Safer Surgical Environment**

**Phase 1: Problem Description**

**Step 1.1- Write a problem statement**

- **What should be occurring? (desired behavior)**
  Surgical personnel should be more aware of the potential for surgical errors during every surgery and focus on ways to reduce hospital medical errors. In a recent study funded by the World Health Organization (WHO), better medical team communication, along with confirmation of specific safety checks during surgical procedures, has been shown to reduce medical errors. Between October 2007 and September 2008, eight hospitals around the world implemented the 19-item WHO safe-surgery checklist (see Appendix A.) Over the course of just one year, the average death rate at these hospitals declined from 1.5% to 0.8%, and the average complication rate declined from 11% to 7%.

- **What is occurring? (problem)**
  Every year, 44,000-98,000 deaths attributable to medical errors occur in hospitals in the US. Surgical errors that involve operating on the incorrect patient or on the incorrect limb or organ are completely avoidable. Other errors, such as administration of incorrect medications, lack of adequate blood supplies, incorrect surgical instrument counts, and use of non-sterile instruments, contribute to additional injuries and expenses due to complications.

- **Who is affected and to what degree?**
  Not only are hospital patients affected, but also hospital personnel, patient’s families, medical service insurers, and the general community. The consequences extend beyond the immediate health care arena. For example, hospitals have liability exposure on this issue that, in turn, raises insurance costs, which, in turn, may get passed along to patients.
• What could happen if the problem isn’t addressed?

If the problem is not addressed, more deaths and injuries will occur and unnecessary expenses will be incurred.

Statement of the problem to be addressed.

Preventable medical errors in hospitals cause between 44,000-98,000 deaths per year, according to the Agency for Healthcare Research and Quality. The implementation of a simple surgical checklist, created and published by WHO, has been shown to reduce surgery-related errors. However, most hospitals have not implemented the safety checklist. In North Carolina, the North Carolina Hospital Association’s North Carolina Center for Hospital Quality and Patient Safety has teamed up with the Institute for Healthcare Improvement to encourage the use of the checklist.7

There is a need for a social marketing effort to encourage surgical service providers to adopt this checklist, or at least a modified version of the checklist that meets their needs. Social marketing can address the need to reframe the problem, develop partnerships with affected groups, provide a cost effective method for achieving change, and identify beliefs that promote or hinder acceptance of the checklist. The surgical team is composed of multiple specialties that work fairly well together but still need improved communication to achieve better outcomes for patients and create a safer environment in the operating room.

From a public health leadership standpoint, this first step is the most crucial in laying the foundation for the intervention. The program leader must take responsibility for creating a consensus vision of a better and safer surgical environment. Here, the program leader has decided to lead the intervention away from a strictly technical solution - the checklist - to consider what Heifetz describes in his book, Leadership on the Line, 8 as an “adaptive solution” which requires a greater understanding of the broader environment.

The target audience, the surgical team, is composed of highly skilled professionals who take pride in their work. The team strives to prevent medical errors anyway, so the checklist might
seem intrusive, redundant, or designed to identify poor performers. The intervention will fail if team members become defensive about their own performance and motivated to fix blame on issues outside their control. Reframing the problem from one of preventing errors, to one that focuses on creating a safer surgical environment, is the key to re-positioning the issue from a negative, possibly divisive intervention, to one with a positive achievable outcome.

**Step 1.2- List and map the causes of the health problem**  

- What are the causes of the health problem?
  - Direct
    - Complex medical systems and procedures
    - Multiple service providers
    - Time pressure
    - Cost constraints
  - Indirect
    - Lack of recognition of problem
    - Lack of leadership to address problem
    - Resistance to change
    - Shifting of responsibility and accountability to others

- What are the risk factors?
  (As prevention of medical errors is not strictly a health behavior, risk factors here are defined as factors that put at risk the target behaviors that allow the surgical team to develop safer surgical environments)
  - Complex technology and equipment
  - Introduction of new equipment without adequate training
  - Defensiveness of surgical team
  - Fear of reprisal from hospital administration
  - Increased lawsuits from patients
  - Rotation of surgical team members

- What are the protective factors? *(Same comment as above)*
  - Committed and highly trained surgical team
Cost incentives to increase quality

Surgical teams have some safety mechanisms already in place

*Health Problem Analysis Worksheet*

<table>
<thead>
<tr>
<th>Health Problem</th>
<th>Direct Contributing Factors</th>
<th>Indirect Contributing Factors</th>
<th>Risk Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical patients experience preventable medical errors resulting in injury or death.</td>
<td>A complex health services system</td>
<td>Resistance to change</td>
<td>Overworked staff</td>
</tr>
<tr>
<td></td>
<td>Time pressures</td>
<td>Lack of clear responsibility</td>
<td>Overbooked facilities</td>
</tr>
<tr>
<td></td>
<td>Cost constraints</td>
<td>Lack of acknowledgement of problem</td>
<td></td>
</tr>
</tbody>
</table>

List of health problem causes categorized as direct and indirect, and as risk and protective factors organized in a logical sequence

**Step 1.3- Identify potential audiences** *(Answers are based on hypothetical focus group data)*

- **Who is most affected by the problem?**

  While the patients compose the most obvious audience affected by surgical errors, for this intervention members of the surgical team are most affected by the occurrence of medical errors: the surgeon, the anesthesia staff including the anesthesiologist or nurse anesthetist, the circulating nurse, the scrub nurses, the surgical technicians, and the pre-op nurses. Within the team, focus group data would be critical in determining which is the most affected.
Who is most likely to change their behavior?

The circulating nurse is the manager of the operating room. He/she is directly involved in ensuring all procedures are followed and the operation is as successful as possible. As the person responsible for overseeing the operation, he/she is most likely to implement this staged approach to increased safety and surveillance.

Who is most feasible to reach?

The circulating nurse is most likely to be the most open to change and to creating a better environment for patient safety.

What are the key secondary audiences?

The anesthetist who assesses the surgical patient just prior to the surgery

The surgeon who performs the surgery

The circulating nurse’s supervisor

Two or three potential audiences.

1. Primary: The circulating nurse
2. Secondary: The anesthetist
   The surgeon

Identifying the circulating nurse as the primary audience would have been decided after careful review of the (hypothetical) focus group data results, which shows this person to be most likely to be open to change and able to implement the additional communication between team members. The surgeon, as the leader of the team, was originally planned as the primary audience. However, the (hypothetical) focus group data noted that he/she has the most resistance to change and most invested in the current system. Therefore, the decision was made against having the surgeon as the primary audience.
Step 1.4- Identify the models of behavior change and best practices

- Which theories appear to have determinants of behavior that match the causal factors you identified in Step 1.3 and why?

There are a number of theories that contribute to the understanding of behaviors caused by the direct and indirect factors listed previously. The Health Belief Model emphasizes individual behavior and accountability that are related to some of the indirect factors listed as lack of acknowledgement of the problem and lack of accountability. The Transtheoretical Model gives insight into readiness for change that is noted as the resistance to change. The Socio-Ecologic Model of health determinants distinguishes between the different levels of health determinants that affect the different team members on an individual, interpersonal, community and fundamental level as members of the health care community, members of their local community, and members of the surgical team. These are listed in some of the direct factors such as cost constraints and a complex medical system.

What has worked with similar audiences in the past based on your review of other programs? At the 2009 Conference of the North Carolina Center for Hospital Quality and Patient Safety, Jack Silversin, DMD, DrPH from Amicus, Inc, and Gary Kaplan, MD, Chairman and CEO of Virginia Mason Medical Center, presented “Engaging Physicians”. Their presentation highlighted benefits, barriers, perceived susceptibility, and perceived severity of physicians working in hospital teams.

A summary of the theories and best practices that you will use. (As previously discussed, the CDCynergy model has been modified to accommodate this health setting intervention. Thus, the health models listed here are also adapted to the goal of implementing safer surgical procedures.)

The Health Belief Model is most compatible with the target audiences and the goals of achieving individual changes in behavior for each audience member.

The Socio-Ecological framework is helpful when considering how all these individuals work within their team structure.
The Transtheoretical Model predicts the readiness to change for each member, which is critical, as this program requires acceptance of change from the usual routine and procedures.

**Step 1.5- Form your strategy team (Actual members of this team are hypothetical)**

- **What are the required roles?**
  - Expert consultant on medical errors
  - Program Leader
  - Program Manager
  - Research evaluator
  - Representative consultants from professions on the surgical team
  - Public relations consultant for development of promotional materials

- **Who can help with financial and political issues within the organization?**
  - The program leader, the nursing management team

- **Who are the external partners most critical to get on board?**
  - Hospital quality organizations, surgical physician organizations, patient advocate organizations

**What organizational structure will be used?**

- **Steering committee**

- **What communications approaches will be used?**
  - Face to face meetings as needed; monthly teleconferences; email, telephone contact

<table>
<thead>
<tr>
<th>Team Member</th>
<th>Affiliation</th>
<th>Role</th>
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</thead>
<tbody>
<tr>
<td>Program Director</td>
<td>UNC-CH School of Public Health</td>
<td>Organization</td>
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<td></td>
<td></td>
<td>Planning</td>
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<td></td>
<td></td>
<td>Development Oversight</td>
</tr>
<tr>
<td>Project Manager</td>
<td>UNC-CH School of Public Health</td>
<td>Lead technical planning team</td>
</tr>
<tr>
<td>Surgeon</td>
<td>UNC Hospitals</td>
<td>Consultant</td>
</tr>
<tr>
<td>Circulating Nurse</td>
<td>University of West Virginia Medical Center</td>
<td>Consultant</td>
</tr>
<tr>
<td>Anesthesiologist/nurse</td>
<td>University of Virginia</td>
<td>Consultant</td>
</tr>
<tr>
<td>Role</td>
<td>Organization</td>
<td>Specialization</td>
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<tr>
<td>-------------------------------------------</td>
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<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>anesthetist</td>
<td>Medical Center</td>
<td>Consultant on focus groups, surveys, healthcare change, physician engagement and patient satisfaction</td>
</tr>
<tr>
<td>Market researcher</td>
<td>Press, Ganey Associates</td>
<td>Consultant on focus groups, surveys, healthcare change, physician engagement and patient satisfaction</td>
</tr>
<tr>
<td>Medical school faculty member</td>
<td>University of Miami, Miami, FL</td>
<td>Expert consultant on prevention of medical errors</td>
</tr>
<tr>
<td>Marketing/public relations consultant</td>
<td>CAPSTRAT</td>
<td>Development of marketing strategy</td>
</tr>
<tr>
<td>Program evaluator</td>
<td>UNC- CH School of Public Health</td>
<td>Reviewing program goals, design, and outcomes</td>
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Decision-making process: A steering group that makes decisions and plans broad directives, and a technical planning team that completes all formative work (i.e. collects and organizes data, investigates promising interventions or best practices, conducts market research on target populations, and performs pilot testing.

Communication process: First meeting face to face. All day meeting at Carolina Inn, Chapel Hill, NC. Monthly thereafter by teleconference from School of Public Health UNC-CH

**Step 1.6 - Conduct a SWOT analysis**

- **How relevant is the problem to your organization's mission/goals?** The need to reduce surgical errors meets the goal of Healthy People 2010: Reduction of Injuries, and North Carolina Healthy People 2010 Goal #4: Protect the Public’s Health

- **Where does the problem fit in your organization's priorities?** The UNC Gillings School of Global Public Health is committed to improving the health of communities through innovative methods and strategies. This social marketing campaign seeks to improve communication between members of the surgical team to create the best possible safe surgical environment.

- **What knowledge is available to ameliorate the problem, and do you have access to that information?** An article published in the January 14, 2009 issue of The New England Journal of Medicine reports on a study that successfully implemented a simple 19-point checklist. In eight hospitals around the world, the checklist was introduced in a learning session and teams learned the procedures. A research team attended the surgeries and recorded use of the checklist.

- **What is the state of relevant technology?** The checklist is low technology. It is completed orally during three scheduled pauses during the operation and is recorded by circulating nurse. In order to
track compliance and outcomes, a simple computer program could be created using currently available standard office software.

- **Are the human, technical and financial resources you need to address the problem available?**
  The steering committee members are mainly local to the area. A grant from the Healthy Carolinians will be sought for expenses related to advertising, marketing and media coverage. Technical resources will involve creating a simple touch or voice-activated program.

- **What activities can you do in-house?** Create the plan; determine timelines, contact stakeholders and partners, finalize contracts,

- **What activities will you need to contract for, and what challenges are presented by the contracting process?** Marketing research and advertising will require contracts. As both identified companies are experienced in this type of campaign, there should be few challenges.

- **What work is already underway to address the problem, and who is doing that work?** The North Carolina Hospital Association has implemented the Institute of Health SPRINT initiative to encourage all hospitals to try the checklist for one operation prior to April 1, 2009. Per Carol Koeble, MD, Director of the North Carolina Center for Hospital Quality and Patient Safety, 50% of acute care hospitals in North Carolina (about 50 hospitals) have pledged to try the checklist once before April 1, 2009. The list is updated regularly on their website. UNC Hospitals is one of the hospitals listed. Dr. Koeble noted that they have not received feedback from any hospitals. They currently send out weekly email reminders. No planned evaluation is anticipated. Additional activities they may employ are laminated checklists cards, pocket sized checklist cards, and poster sized checklists.

- **What gaps exist?**
  Knowledge of the checklist;
  Support from healthcare staff and administrators
  Impact on other stakeholders

- **What political support and resistance surround the problem?**
  Medicare has issued guidelines to deny coverage for certain avoidable medical errors, therefore hospital organizations support increasing hospital safety. Medical insurance companies seek to reduce costs.
Physician groups may resist the checklist as waste of time and view it as increasing costs, as it adds time to surgeries, rather than decreasing costs.

- **What organizations or activities that affect the problem indirectly (that work “upstream” in your health problem analysis could be potential partners?**

  There are a number of upstream organizations, which are interested in reduction of medical errors. Patient insurance companies, malpractice insurance providers; community health activists; medical practice consultant organizations, public health organizations, patient advocates.

- **Are there ethical concerns associated with any of the possible interventions?**

  The improvement of safety in the hospital certainly has ethical implications, as all patients are entitled to the safest environment possible. The surgical team also has a right to expect a safe environment for their patients and for themselves.

SWOT worksheet. (This worksheet completed with the assistance of Edward Dauer, MD, faculty member at the University of Miami Medical School.)

The strengths, weaknesses, opportunities and threats identified, along with any ethical barriers to adopting particular interventions in your community. Also, a summary of eliminated approaches and ones that appear to be more attractive based on the SWOT analysis.

<table>
<thead>
<tr>
<th>Factors/Variables</th>
<th>Internal</th>
<th>External</th>
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<tbody>
<tr>
<td>Positive</td>
<td>Strengths</td>
<td>Opportunities</td>
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</table>
Simple concept
Low cost
Rapid training
Rapid implementation
Measurable results
Tested and validated method

Reduction in surgery-related errors
Better patient/healthcare relationship
Increase in communication for surgical team members
Increased visibility to community for implementing high standard promotion

Weaknesses
More time per operation slot
Possible cost increase for prophylactic antibiotics
Resistance to change in established procedures
Resistance to sharing responsibility for patient
Previous testing of checklist only done in large academic hospitals rather than in smaller community hospitals where the majority of routine surgeries are performed

Threats
Surgical personnel may be concerned about lawsuits if checklist not followed exactly
Surgical personnel may not support performing all items on checklist for all surgeries
Circulating nurse may not want to interfere with established surgical and anesthesia timeframes

Phase 2- Market Research (These responses are hypothetical but based on reasonable assumptions)

Step 2.1- Define your research questions

- What gaps or assumptions are there in your Phase 1 analysis?
  The checklist will not be too intrusive to the operating room schedule
  No team member has strong objections to pausing during the operation to do the safety checks
  The checklist needs to be followed fairly closely.
  The circulating nurse is the best primary target audience

- What questions are suggested by the theory (ies) of behavior change you are choosing for guidance?
  How ready for change are members of the surgical team?
  Does the perceived susceptibility and perceived severity combine to pose a great enough threat to initiate a change?
  Are the benefits of reduction in surgical errors and better outcomes for patients an acceptable exchange for the need to change operating room procedures?
  How do the individual health beliefs of each team member influence the beliefs of the other team members?
• **What questions do you have about applying best practice to your specific target audience and situation?**
  When do I need to reassess the success of my target audience? After 1 month? After 6 months? Do I reform a focus group?

• **What questions do you have about benefits, barriers and competition for some behaviors you may want to target?**

• Will the circulating nurse develop behaviors that are influenced by the increase in responsibility?

• Will the other team members exhibit different behaviors depending on the background training of the circulating nurse?

**List of research questions (divide them into nice to know and need to know)**

**Need to know - for each target audience:**

What are the benefits to implementing the checklist?

What are the barriers to implementing the checklist?

What do the members of the surgical team have to exchange to implement this behavior?

Which members of the surgical team are most ready for change?

**Nice to know:**

How do other surgical personnel such as housekeeping, medical engineering, and information technology interface with members of the surgical team to create a safe surgery environment?

How will hospital administrators be rewarded if hospital surgical errors decrease?

**Step 2.2 - Develop a market research plan**

• **Which of the research questions developed in Step 2.1 can be answered using secondary sources and which ones require collecting new (primary) data?**

  There are currently data on how to engage physicians in change as noted previously. In addition, the article in the New England Journal provides excellent reference material.

  New data will need to be gathered from focus groups of surgical team members individually specifically about surgical safety, a doer vs. non-doer analysis and indication of readiness to change. Patient surgery education and satisfaction surveys will be performed pre and post campaign.
• **Will you be using qualitative or quantitative methods to answer your primary research questions and if so which ones specifically?** *(While Press Ganey is a real market research company, this information is hypothetical)*

Press Ganey Associates will conduct the marketing research. They have agreed to conduct it free of charge as a partner. The focus groups will provide both qualitative and quantitative data. The data on medical errors will after implementation of the campaign will provide quantitative data. Patient satisfaction surveys before and after the campaign will also provide quantitative data.

• **In what order will you conduct your formative studies?**

The focus groups will be conducted first. There will be a focus group for the least characterized member of the surgical team- the circulating nurse. There will also be a focus group of all members of surgical teams. Then the patient education/knowledge surveys will be conducted.

**Market Research Plan**

Press Ganey Associates will be the marketing research vendor. Their expertise in research on health team members will be invaluable in characterizing the primary target audience, the circulating nurse, as well as other activities noted above.

The marketing research plan is often neglected due to time constraints, cost constraints, or just due to lack of knowledge. For this intervention, the program leader recognizes that one member of the surgical team, the circulating nurse, is the target audience segment that is least characterized. Many different types of nurses traditionally hold the circulating nurse position; therefore the demographic characterization is difficult. The program leader has partnered with a professional marketing research firm to conduct the new formative research that is not available through secondary sources. The insights into the barriers, benefits and competitive behaviors of the circulating nurses will be invaluable when tailoring the intervention.

**Step 2.3- Conduct and analyze market research**
• Who will carry out each major component of the market research plan you crafted in the previous step?
  Press Ganey Associates will conduct the focus groups and surveys and compile the results. The UNC-CH program leader and program evaluator will review the findings with the rest of the steering committee.
  Feedback will be obtained from the steering committee consultants prior to developing the final marketing strategies.

• What are their roles and responsibilities?
  The program director is responsible for study oversight, the other team members roles are defined above.

• If needed, who will be the lead researcher?
  The program leader is the lead researcher.

• How will you tabulate and analyze the data?
  Press Ganey Associates, along with the program evaluator, will analyze the data and present the findings to the program leader.

  Market research analysis  In an actual campaign, the results would be compiled here.

Step 2.4- Summarize research results.

Market research results summary worksheet: In an actual campaign, the data would be compiled here.

<table>
<thead>
<tr>
<th>Executive Summary</th>
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<tbody>
<tr>
<td>Introduction</td>
</tr>
<tr>
<td>Methodology</td>
</tr>
<tr>
<td>Results</td>
</tr>
<tr>
<td>Conclusions and Recommendations</td>
</tr>
</tbody>
</table>

Market research results summary- In an actual campaign the results would be summarized here.

Based on anticipated focus group data, the market research firm would recommend that the surgical team be segmented into three separate target audiences. The circulating nurse is the
member of the surgical team who has an overall responsibility and management of the operation. He/she does not have technical responsibilities, is able to record details, is able to ensure the stages of the checklist are followed, and can facilitate communication between team members. He/she will coordinate the implementation of the checklist within the list of surgical procedures.

The anesthetist, as the assessor of the patient just prior to surgery and communicator with the pre-operative team, is a good secondary audience. The surgeon, as the leader of the medical team and ultimately responsible for the success of the operation, is also an important secondary audience. In the doer vs. non-doer analysis, the members who expressed the most desire to communicate with other team members were most open to the idea of the checklist. It would be anticipated that the circulating nurse focus group would most strongly express this desire.

In conclusion, the (hypothetical) market research indicates that the circulating nurse should be the primary target audience. The secondary audiences should be the anesthetist and the surgeon. The program leader had originally planned for the surgeon to be the primary audience, as he/she is the leader of the surgical team. However, the circulating nurse focus data showed that he/she would actually be the best primary audience for the intervention. As the program leader, being open to new information and being willing to redesign an intervention based on new data is an essential leadership skill.

**Phase 3- Market Strategy (These strategies are based on reasonable assumptions derived from the preceding hypothetical research assumptions and data)**

**Step 3.1- Select your target audience segments**

For each of the potential segments (circulating nurse, surgeon, anesthetist), answer the following questions using information from your research findings:

- **What are their aspirations?**
- **Circulating nurse:** Good relationships with all team members, increasing responsibility and respect, eventual promotion to position in the Intensive Care Unit, better patient outcomes
• Surgeon: High status in the community, independence, recognition for high performance from peers, improved patient outcomes
• Anesthetist: Reward for good performance, independence, lower work stress, improved patient outcomes
• What are the benefits of the target behavior valued?
• Circulating nurse: Better team communication, fewer errors as team members check each other’s work, good performance evaluations, improved patient outcomes
• Surgeon: Better patient outcomes, better reputation
• Anesthetist: Better patient outcomes, less stress during the operation

• What are the competitive behaviors practiced?
• Circulating nurse: Need for acceptance by other team members, promotion of harmony, fear of disrupting set routine
• Surgeon: Desire to keep operating time to a minimum, desire to limit communication with other team members, focus on technical aspects of surgery
• Anesthetist: Need for routine to reduce stress, desire to limit communication with surgeon to technical details

• What information channels are used?
• Circulating nurse: oral, written, visual and electronic
• Surgeon: oral, written, visual, and electronic
• Anesthetist: oral, written, visual, and electronic

• What is their level of readiness for change?
• Based on the Transtheoretical Model, the readiness to change categories are listed in order from Pre-contemplation, Contemplation, Preparation, Action, and Maintenance.
• Circulating nurse: Preparation (ready to take action in the next 30 days)
• Surgeon: Pre-contemplation (no plans to take action within the next six months)
• Anesthetist: Contemplation (planning to take action within the next six months)

Which segments have the following?

• Perceived benefits that are easy to build into an exchange: Circulating nurse, anesthetist
• Competing behaviors against which you can “win”: Surgeon
• The largest number of people reachable at the smallest cost: Circulating nurse
• The greatest readiness to change: Circulating nurse
• Based on the characteristics and concerns of secondary audiences (influentials) in your Phase 2 research, does the amount of influence they have merit devoting program resources to reaching them as a distinct audience segment? Yes, the circulating nurse had the greatest readiness to change, is the easiest to reach, has the most to gain and has the least difficult competing behaviors

List of primary and secondary target audience segments refined from the list created in Step 1.2 using the results of the research done in Phase 2.

Primary: Circulating nurse       Secondary: Anesthetist, Surgeon

Step 3.2- Define current and desired behaviors for each audience segment

• What behaviors are the audience segments you have chosen currently engaged in?
  • Circulating nurse: maintaining the currently approved procedures
  • Anesthetist: Interacting with the surgical team only as needed
  • Surgeon: Communicating only as necessary
  • Which of these behaviors could be changed in the short-run?
- Circulating nurse: could begin discussion of thinking about issue from prevention of medical errors (negative and divisive) to ensuring a safe surgical environment (positive and inclusive of patients and surgical team), and how the checklist will help ensure a better surgical environment.

- Is it likely to change them with a little more incentive? If audience members take the desired action, will it make a tangible difference in achieving your overall program goal? Anesthetist could announce the pauses to discuss the safety precautions, with each pause being recorded by the circulating nurse with credit given to the anesthetist.

To narrow your list down to the final priorities, answer these questions about the following factors for each audience/behavior pair:

**Risk**

- Is the target audience segment currently practicing risky or unhealthy behaviors? (As this is an adaption of the CDCynergy model, there are not actually risky health behaviors being practiced. However, below are listed some reasonable assumptions about behaviors that would limit the success of implementation of the checklist, based on the preceding hypothetical data)
  - The circulating nurse might be concerned with maintaining the current procedures.
  - The anesthetist might want to continue to limit interaction with the surgeon.
  - The surgeon may not want to interrupt the set surgical routine even to see if it would improve outcomes.
  - How serious is the risk? The risk of completely avoidable surgical errors is too high if even one patient is injured.

**Impact**

- Does the new (desired) behavior reduce risk? Yes, the new behaviors have been shown to decrease medical surgical errors
- Will addressing this audience/behavior have a useful, lasting impact on the problem? Yes, as the audiences adopt the new frame of creating a better and safer surgical environment for themselves and their patients, and they accept that the new behaviors improve their lives as well as the lives of the patients, they will reduce surgical errors and reduce stress and costs overall.
- How effective will the proposed behavior be at reducing overall negative outcomes or improving positive ones? The published research supports the intervention as improving outcomes.
- Is the audience/behavior being effectively addressed by anyone else? In North Carolina, there is not an effective social marketing campaign for reduction of surgical errors. The SPRINT initiative encourages hospitals to tryout the checklist, but no information was found regarding using a behavioral approach.

**Behavioral Feasibility**

- Is the audience likely to adopt the behavior? Is the current behavior seen as a problem? How ingrained or “rewarding” are the current or competing behaviors? The circulating nurse is the most likely to adopt the behavior, as it can be fairly easily integrated into the operation schedule. The anesthetist conducts a pre-operative assessment with the patient and can be aware of the checklist items during his assessment and prior to induction of anesthesia. The surgeon may be reluctant to pause any longer than briefly prior to incision as technical surgical issues are uppermost at that time, so the circulating nurse will need to take the lead for the second pausing period. The circulating nurse will also need to take the lead for the third pause as the anesthetist is needed to lead post-operative management details and the surgeon will be attending to technical surgical details.
- **How costly is it (time, effort, resources) for the audience segment to perform the behavior?** For all, the time, effort and resources are minimal. However, as time is very valuable, even brief additional periods of time may be viewed as costly.

- **How complex is the behavior (does it involve few or several elements)?** The behavior is fairly simple, though for the surgeon it involves additional effort to communicate.

- **How frequently must the behavior be performed?** There are three pauses during the operation. The circulating nurse and anesthetist are involved in all three, but the surgeon would only be involved in the last two as the surgeon is not normally present during the induction of anesthesia.

- **How compatible is the proposed behavior with the audience’s current practices (is the behavior socially approved)?** The behavior is not incompatible, but the additional effort at communication is not normally required.

- **Are there major barriers to engaging in the desired behavior?** What information, skills, resources and/or access must the audience segment acquire to overcome the barriers and make the desired behavior change? All audiences must become convinced that additional communication will lead to a better safer surgical environment for themselves as well as their patients.

- **Are there at least some members of the segment (“doers”) who manage to do the desired behavior? Do they have unusual characteristics?** In the doer vs. non-doer analysis, the doers are members of a more stable surgical team who work together on a regular basis, and have more frequent communication on a regular basis.

**Resource Feasibility**

- **How effectively can we reach this audience segment given our available resources?** All members are readily available as they work together in a specific location in a specific community.

- **How effectively can we influence their behaviors given our available resources?** We should be able to influence behavior with minimal resources after a media launch and marketing materials are distributed.

- **Can this audience/behavior be addressed within the timeframe of the initiative or does it require an ongoing effort?** The behavior can be changed within the timeframe of the campaign, which is one year. There should be ongoing effort to reinforce the behavior changes.

**Political Feasibility**

- **Will the community (or other important stakeholders) support this audience/behavioral objective?** The patient community will support the efforts to implement a safer surgical environment.

- **Does your organization support the choice?** Yes, the UNC-CH School of Public Health endorses the NC Healthy People 2010 goals of ensuring the public’s safety.

**Worksheet:**

Utilize the interactive Health Intervention Comparison Wizard provided for this step in CDCynergy. (In an actual campaign this would be completed.)

**Descriptions of current and desired behaviors for each audience segment**

(In an actual campaign this would be completed.)

**Step 3.3- Describe the benefits you will offer (In an actual campaign the focus groups would have been asked these questions so the responses could be analyzed here)**

- What do your audience research findings show that the target audience wants?
- What do audience members say they value the most?
- What are you asking them to do?
- What they’ll get in return?
- Does the exchange you are proposing meet the following criteria?
  - Easy-to-irresistible to accept?
  - Maximizes the benefits they will get for adopting a behavior?
  - Minimizes any barriers that might deter them?

Worksheet: Exchange Worksheet

<table>
<thead>
<tr>
<th>Audience member gives:</th>
<th>Audience member gets:</th>
<th>Social Marketer gets:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circulating nurse: gives up comfort of established practices</td>
<td>More respect from team members by taking on bigger role</td>
<td>A checklist facilitator</td>
</tr>
<tr>
<td>Anesthetist: gives up less responsibility and accountability</td>
<td>More control over patient outcomes and better team communication</td>
<td>A team champion who can assist with promoting the goals of the checklist</td>
</tr>
<tr>
<td>Surgeon: gives up autonomy and power</td>
<td>Better surgical outcomes</td>
<td>The best and safest surgical environment for patients and surgical providers</td>
</tr>
</tbody>
</table>

**Description of the benefits that will be offered.**

**See table above**

**Step 3.4- Write your behavior change goal (for each audience segment)**

- **Who?** The circulating nurse
- **Will do what?** Coordinate the pauses in the operation per the WHO checklist
- **Under what conditions?** Every operation
- **In exchange for?** Improving the safety of the surgical environment for the team and the patient

- **Who?** The anesthetist
- **Will do what?** Lead the first two pauses in the operation per the WHO checklist
- **Under what conditions?** Every operation
- **In exchange for?** Improving the safety of the surgical environment for the team and the patient

- **Who?** The surgeon
- **Will do what?** Lead the effort to increase his/her communication with other team members per the WHO checklist
- **Under what conditions?** Every operation
- **In exchange for?** Improving the safety of the surgical environment for the team and the patient

**Behavior change goal write-up**

By reframing the issue as a negative medical error problem to a positive improvement in the safety of the surgical environment for the entire team, the surgical team will be motivated to improve their attention to reduction in medical surgical errors

**Step 3.5- Select the intervention(s) you will develop for your program** (For this step, pretesting of the intervention materials would be conducted using the same focus groups formed earlier. Interventions listed below are based on reasonable assumptions from the hypothetical data obtained. However, the Naval Aviation program, known as CTM, is actually used extensively.)

**What interventions do you propose to develop?**
**Communication about benefits.** Surgical team members will watch a short film presentation. In the film, a safer surgical environment will become relevant to the team as well as the patient. The short film will be created to compare the surgical team to an airline flight team. In the film, the air traffic controller, the pilot, and the navigator will preparing the plane for a flight, check the plane instruments and weather prior to take off, and recheck all systems prior to landing. CME credits will be awarded to surgical team members.

**Providing or improving a service.** After the film, team members will be asked about the role each airline team member would play if they were on a surgical team. Discussion will be directed around using the analogy of the airline teams that strive to ensure the safety of their passengers as well as themselves, and how each member plays a role in ensuring a safe environment for flying.

**Developing or adapting a product.** Discussion will be encouraged regarding the checklist and how it can be adapted for use to ensure a safe surgical environment.

**Changing policy through advocacy and community mobilization to reduce barriers to service.** Media coverage of the initiative will be sought with personal stories solicited from community members and surgical team members highlighting how increased efforts at safety during surgery affect community members and surgical team members alike.

**List of interventions to be developed**

*For Circulating Nurse:* A clipboard with surgical checklist printed on it, or an adaptation of whatever type of devices are normally used for recording surgical procedure information. This might be a voice activated PDA or a specialized touch screen.

*For Anesthetist:* A poster for the pre-op room assessment with reminders to communicate to patient the safest surgical environment initiative. Model airplanes with reminders to complete the checklist for the locker room.

*For Surgeon:* Communication reminders- special gloves with “Surgical safety is in your hands” printed on them.

*For surgical team:* Film presentation on airline team safety measures; discussion after film; media coverage of checklist initiative

**Step 3.6- Write the goal for each intervention**

- How will each intervention work to influence the audience to adopt the new behavior?
  Using Product, Price, Place and Promotion effectively to implement behavior change.

**Description of in goals for the interventions**

See above

From this point forward, the CDCynergy program outlines the steps needed to create the actual intervention, how to evaluate the intervention, and to implement the intervention. It is not within the scope of this paper to complete the last three phases. However, some leadership insights into the next steps are discussed.
Phase 4- Interventions

Step 4.1- Select members and assign roles for your planning team.

Step 4.2- Write specific, measurable objectives for each intervention activity.

Step 4.3- Write a program plan, including timeline and budget, for each intervention.

Step 4.4- Pretest, pilot test, and revise as needed.

Step 4.5- Summarize your program plan and review the factors that can affect it.

Step 4.6- Confirm plans with stakeholders.

Naturally, the actual intervention will have a budget based on the grant money obtained. The AHRQ has a grant program for implementing hospital safety plans, so a grant application would possibly be submitted. It is important to apply for grant money well in advance of the anticipated start date. As the Institute for Health Improvement is spearheading the national initiative, this group would also be a good source for funding and partnering.

The need for measurable specific objectives will be critical for evaluating the intervention and analyzing results. For example, one objective could be that the checklist will be implemented in at least 50% of surgeries by the end of the first 6 months of the intervention.

While the intervention may seem well designed based on all the market research and formative research conducted, it is certainly not foolproof, so pre-testing, pilot testing and revising the design are critical prior to full-scale launch.

Phase 5- Evaluation

Step 5.1- Identify program elements to monitor.

Step 5.2- Select the key evaluation questions.

Step 5.3- Determine how the information will be gathered.

Step 5.4- Develop a data analysis and reporting plan.
The evaluation phase is one that is often abbreviated or skipped entirely, as the program leader is anxious to get the intervention started. However, the program evaluator has valuable input that the program leader needs to consider prior to the implementation.

**Phase 6- Implementation**

*Step 6.1- Prepare for launch.*

*Step 6.2- Execute and manage intervention components.*

*Step 6.3- Execute and manage the monitoring and evaluation plans.*

*Step 6.4- Modify intervention activities, as feedback indicates.*

Most often this final step is the one that the public health researcher has been awaiting for such a long time that it may seem that once it is complete the intervention is over. However, as marketers are well aware, this last phase is really only the lead in back to the first phase. Now what needs to be done is a re-evaluation of the problem, consideration of new research findings, development of new marketing strategies, and back to modifying the intervention. For this particular intervention, it will be necessary to continuously monitor the surgical environment to ensure gains are maintained. Additional target audiences, such as the pre-operative nurse, the medical equipment technologists, and housekeeping might be brought in to further ensure surgical safety.

For the purposes of this paper, the final three phases were not addressed. However, these are the critical areas where the careful problem identification of the need for a method of reducing surgical errors would be tested. In addition, the marketing strategies developed from the focus group research would reveal if the target audiences were correctly characterized, if the interventions were successful, and measurement of surgical errors would be taken. Since CDCynergy was modified for this intervention, development of a standardized nomenclature for
health procedure social marketing campaigns would be instrumental in broadening the scope of CDCynergy.

The social marketing approach does not replace the need for solid knowledge of public health objectives and goals, but rather allows the program leader to take advantage of proven methods for identifying, engaging and influencing target audiences. Social marketing techniques draw attention to the reality that all populations are actually composed of individuals- persons with hopes, dreams, personal goals, barriers, motivations, and fears. While public health seeks to promote positive changes within communities, staying in touch with the individual keeps the researcher reminded of the impact that individuals have on their populations.

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4. CDCynergy website: [http://www.orau.gov/cdcynergy/soc2web/default.htm]


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Appendix A: Surgical Safety Checklist