Matt Long Case Study:

Walking with a Cane

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¹ Alphabetical order
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Matt Long Case Study: Group 2

Case Study Overview

Matt Long, a 41 year old Caucasian firefighter from New York, Ladder 43, decided to better his life after witnessing the frightening destruction of the Twin Towers of the World Trade Center (Long & Butler, 2011). He underwent intensive training, lost approximately 37 pounds of body weight and was able to complete more than 20 athletic events including several triathlons and marathons. He was qualified for the most prestigious runner’s race known as the Boston Marathon where he earned the title ‘Ironman’.

During a transit strike in New York City on December 22, 2005, Mr. Long was involved in a near fatal accident as he was cycling to work. He was struck by and sucked under a 20-ton bus that was making an illegal turn. Mr. Long was tangled in the frames of his bicycle and suffered catastrophic injuries such as massive internal bleeding from the open wound from abdomen to anus, shattered pelvis, a broken leg, a broken arm, and a dislocated shoulder. He received 69 units of blood within the first 24 to 48 hours, underwent more than 40 reparative surgeries, and was discharged home after five months of hospitalization with a colostomy and an abdominal wound vacuum (Long & Butler, 2011). Almost 22 months after the accident, he was readmitted for his numerous reconstructive surgeries that included colostomy reversal, scar tissue removal, and abdominal wound closure. Days after the surgery, Matt was discharged home with significant weight loss, muscle weakness, and many psychological problems. In spite of the severity of his injuries, Matt suffered psychological consequences of the accident due to the fact he was no longer able to compete at the highest level (Long & Butler, 2011).

Group two addresses a period of time in which Matt has a colostomy reversal to the time he is able to ambulate well with the assistance of a cane. During this time, Matt’s reversal was a
success and he eventually was able to tolerate a regular diet. Shortly after surgery, Matt decided to rid himself of his crutches and utilized a cane for assistance with ambulation. On February 8, 2008, Matt traveled to Arizona for rehabilitation (Long & Butler, 2011). Within a five-week period, Matt was able to intensify his exercise program that resulted in less use of his cane. The surgeries left Matt’s right leg three-quarters of an inch shorter than his left, requiring that he use a special shoe. He still walks with a limp, but has slowly regained endurance. On March 14, 2008, Matt successfully ran his first mile following his traumatic accident. In the midst of intense physical and psychological agony, fear, disappointments and loneliness, Matt was able to accomplish his goal of running again.

**Relevance of Case Study to Today’s Health Care Delivery System**

A summary of the literature review to support the topic of telehealth care delivery in the post-operative and rehabilitation periods is provided. First the literature review process will be described followed by the key literature review findings.

**National Quality Strategy**

Since the passage of Affordable Care Act (ACA), the health industry as a whole now has an increased commitment to health and health care quality. The *National Strategy for Quality Improvement in Health Care* (National Quality Strategy) establishes a framework for quality of health and healthcare in America (U.S. Department of Health and Human Services, 2013). National Quality Strategy has three aims: better care, healthy people or healthy community, and affordable care and these targets can be achieved through making health care more patient centered, reliable, accessible, and safe; addressing the behavioral, social, and environmental determinants of health in addition to delivering higher quality of care; and by reducing the cost of quality health care. In the annual 2013 report to congress, the *National Quality Strategy* put
forth six priorities to improve the health and health care in America. Those that most directly apply to Matt’s case are: ensuring that each person and family is engaged as partners in their care, and promoting effective communication and coordination of care (U.S. Department of Health and Human Services, 2013, p. 1).

**Interprofessional Collaboration**

Collaborative practice happens when multiple health workers from different professional backgrounds work together with patients, families, and communities to deliver the best care possible (World Health Organization, 2010). It helps the individual health care provider to use their knowledge and expertise to achieve the highest possible health goals for the individual patient. Collaborative practice not only strengthens health system but also helps to improve the health outcome. According to the *Core Competencies for Interprofessional Collaborative Practice Report of Expert Panel* (2011), Interprofessional collaborative practice is the foundation of safe, high quality, accessible, highly desired patient centered care. It encompass of four different competency domains such as values/ethics for interprofessional practice, roles/responsibilities, interprofessional communication, and teams and team work (World Health Organization, 2011, p. 16). Matt’s survival from the accident to the step by step improvement in health status is attributed to the interprofessional collaborative efforts of many health care providers including general physicians from different service lines including trauma, emergency medicine, surgery, neurology, critical care, gastroenterology, psychiatry, and physical medicine and rehabilitation; nurses; physical therapists; occupational therapists; speech therapists; dietitians, and behavioral therapists.
Technology Applicable to the Matt Long Case

Telemedicine or telehealth is the use of medical information exchanged from one site to another via electronic communications to improve, maintain, or assist patients’ health status (American Telemedicine Association, 2014, p. 1). Evaluation of the telehealth literature was conducted to determine applicability of today’s technology to the Matt Long case. The three most common types of telehealth appear to be: telemedicine cart-based visit, secure portal (e.g., ClickCare.com) and/or videoconferencing, and remote patient monitoring. Key words used in the literature review process were information technology, telemedicine, telehealth and telerehab. Findings are listed in Appendix A. Much of the research surrounding the use of telerehabilitation has used single case study or very small study designs. A review of the published studies reveals that in the case of Matt Long, image-based telerehabilitation could be chosen to assist with his physical rehabilitation goals. Using image-based technology, rehabilitation specialists can manipulate environments to incorporate key rehabilitation concepts such as task repetition, feedback and motivation which have been demonstrated to result in the learning of new motor skills which translate to the real world (Russell, 2007).

Technology-based Intervention/Application

First, physical and behavioral health assessments related to the case study will be described followed by content reflecting how each of three telehealth modalities can be used to carry out the intervention(s)/application(s).\(^2\) Interprofessional education (IPE) interaction and collaboration along with the discipline-specific activities will be included.

Physical and Behavioral Assessment

After the colostomy reversal, Matt spent two weeks recovering in the hospital restricted to liquid diet and losing almost 30 pounds from the previous weight. Surgery left him with a large abdominal incision measuring 18 inches long covering 100 staples and prior orthopedic surgical interventions left his right leg is three-quarters of an inch shorter than his left. Matt has now received anticipated news that his colostomy reversal was successful and he is now medically cleared to begin rigorous training and conditioning (Long & Butler, 2011, p. 211).

Through the roads of recovery, Matt found himself quickly fatiguing. As a result, Matt is stressed and has anxiety about his future goal of running again. Other signs of anxiety are shown when Matt states he does not want to spend the winter in New York again trying to dodge people in the winter streets and also looking out for buses. This brings back memories of what happened although he does not remember in detail. It seems that Matt is the only person that does not see progress. Matt’s friends, doctors and therapist all have seen his progression. Although there has been much progression Matt fails to see how far he has come and feels he has so much more to accomplish. Matt has been very hard on himself which can also make Matt’s road to recovery difficult. He still seems to keep a positive attitude but those moments of anxiety and stress can play a major role in the outcome of his recovery (Long & Butler, 2011, p. 219).

World Health Organization (2010), identified six interprofessional learning domains to guide the healthcare delivery to bring forth desired outcome and these include team work, roles and responsibilities of the health workers, communication, learning and critical reflection, being able to recognize the need of the patient, and valuing ethical practice (p. 26). These domains and
can be effectively applied in Matt’s recovery and rehabilitation process as he still require careful attention and guidance from the multidisciplinary team members.

**Technology Assessment Finding #1 [Telemedicine Cart]**

Telemedicine carts are equipped with diagnostic cameras and image transfer software, digital scopes, portable EKG monitors, vital sign monitors, and ultrasound probes to streamline patient care and is capable of capturing, transferring, and storing diagnostic medical images and patient data between medical practitioners (Global Media Group, 2012-2013). Telemedicine cart could be used to store and forward data using asynchronous transmission, can have live consultation via video conferencing using synchronous transmission, or may be used of remote monitoring (American Telemedicine Association, 2014). In Matt’s post-surgery and rehabilitation process, a telemedicine clinic with general exam camera can be utilized to assess surgical wound evaluation and in assessing the gait pattern as he is training to walk again. This allows Matt to go to a nearby telemedicine clinic once or twice a week as directed and the data collected via the telemedicine cart will be sent to the specialists in real time. This may be a preferred method in his recovery process as it eliminates the need to travel to New York Presbyterian Hospital see specialists especially during his stay in Arizona for rehabilitation.

**Technology Assessment Finding #2 [Secure Portal and/or Videoconference]**

Video conferencing can assist in providing counseling, treatment and management of depression and other psychological issues. Matt is stressed and has anxiety about his future goal of running again. Although he has come so far in his recovery, Matt fails to realize how much progress he has made. Matt has been very hard on himself which can also create roadblocks and make Matt’s road to recovery difficult. The continuous monitoring of Matt’s stress and anxieties

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3 As applicable, incorporate a summary of the results of the behavioral health advisement template.
4 As applicable, incorporate a summary of the results of the behavioral health advisement template.
is important in his recovery. Video conferencing will allow Matt and a psychiatrist to meet at specific times and discuss mood and wellbeing.

According to Dorstyn, Saniotis and Sobhanian (2013), telecounseling is the delivery of individual or group counseling by phone or video conferencing. It helps to eliminate the stigma regarding mental health care and care is more accessible by reducing mental health barriers. Dorstyn et al., (2013), concluded that participation in telecounseling services was satisfactory and consistent in a systematic review they performed. Most studies had outstanding treatment compliance at 75-97 percent.

Microsoft net meeting will be the video conferencing tool used in Matt’s care. This tool is free with a windows operating system and must be installed on the user’s computer. This tool is inexpensive and convenient. It allows real time communication and collaboration. Matt and the psychiatrist can have scheduled meetings to follow up with Matt and his mood and help prevent anxiety and depression (Microsoft, 2014).

**Technology Assessment Finding #3 [Remote Patient Monitoring]**

Automated telehealth interventions uses technology such as telephones, computers and other telecommunication systems to help evaluate patients, provide certain types of treatment or send reminders, such as a reminder to take medication. In considering the case of Matt Long, the use of a remote electronic device such as Health Buddy may be useful in monitoring and detecting behavior changes sooner and address issues more quickly. The Health Buddy is an electronic device connected to a home telephone line that automatically administers tailored questions, reminders, and educational information regarding symptoms, vital signs, disease-specific tests, self-management knowledge, and health behaviors (The Dartmouth Institute, [Dartmouth Institute, 2013]).

5 As applicable, incorporate a summary of the results of the behavioral health advisement template.
2014). In an effort to provide Matt Long comprehensive collaborative care, a psychiatric consult was utilized to obtain telehealth technology recommendations. Those recommendations are included in the consult response noted in appendix B.

**Outcomes Measurement**

**Patient Response**

Physical improvements in Matt’s case are evidenced by the ability to run and an increase in muscle mobility. Maintaining a positive attitude without anxiety or depression is a mental improvement in Matt’s case as well. Matt’s main goal is to run again and to compete in the “Iron Man” competition. Matt’s care including physical and mental is geared towards achieving this goal. The hard work, resources used and cost of care will be compared to Matt’s outcome in a cost benefit analysis.

**Cost-Benefit Analysis**

Cost-benefit analysis in health care is the analysis of health care resource expenditures relative to possible medical benefit. This analysis may be helpful and necessary in setting priorities when choices must be made in the face of limited resources. This analysis is used in determining the degree of access to, or benefits of, health care to be provided.  

The collaborative team involved in Matt’s care included: physicians and staff, physical therapist and staff, psychiatrist and other members of the care team. Each member of the team spent required time with Matt along the journey in his care. The care of Matt involved using several different types of equipment. Matt used physical therapy equipment that aided him in strengthening and conditioning. He also used many different types of technology equipment as well. Matt’s also used a gym/rehab facility as part of his care as well.

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6 Source: www.acmq.org/policies/policies10and11.pdf
Each member of the collaborative team provided specialized care to Matt. The hard work and time put in by Matt and members of the care team were worth all time and energy spent. Matt achieved his goal of running again and now he is preparing for the next goal of winning the “Iron Man” competition.
References


## Appendix A

**Table 1**

*Evaluation of the technology literature and Web sites applicable to Matt Long’s case*

<table>
<thead>
<tr>
<th>Technology Name</th>
<th>Article Author</th>
<th>Web Site Link</th>
<th>Technology Description</th>
<th>How Technology Proposed for Use in the Case</th>
<th>List of IPE Professional who should use the technology</th>
<th>Cost/Coverage by Insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telemedicine Cart Visit</td>
<td>GlobalMed</td>
<td>1. <a href="http://www.globalmed.com/additional-resources/telemedicine-carts.php">www.globalmed.com/additional-resources/telemedicine-carts.php</a></td>
<td>Telecare stations that can capture, transfer, and store diagnostic medical images and patient data between medical providers</td>
<td>Using the general exam camera option Matt’s wound healing and gait pattern can be assessed and care can be coordinated with specialists at NY Presbyterian Hospital</td>
<td>Physicians, Nurses, Physical therapist, Occupational therapist</td>
<td>Private Insurance &amp; Medicaid (per state policy).</td>
</tr>
<tr>
<td>Consultation Portal/</td>
<td>Microsoft</td>
<td>1. <a href="http://technet.microsoft.com/en-us/library/bb490834.aspx">http://technet.microsoft.com/en-us/library/bb490834.aspx</a></td>
<td>enables real-time communication and collaboration over the Internet or an intranet</td>
<td>The Psychologist can give Matt telecounseling services to prevent depression and anxiety</td>
<td>1. Psychologist and Matt Long, 2. PT and Matt Long</td>
<td>No Charge (Free for Windows operating system)</td>
</tr>
<tr>
<td>Patient Video Conference</td>
<td>Russell</td>
<td>2.<a href="http://ezproxy.twu.edu:2339/ehost/pdfviewer/pdfviewer?sid=c5b041b3-f039-4ea4-b57e-4d76b5e4949a%40sessionmgr4001&amp;vid=4&amp;hid=4104">http://ezproxy.twu.edu:2339/ehost/pdfviewer/pdfviewer?sid=c5b041b3-f039-4ea4-b57e-4d76b5e4949a%40sessionmgr4001&amp;vid=4&amp;hid=4104</a></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Remote Monitoring</td>
<td>Dartmouth Institute of Health</td>
<td><a href="http://tdi.dartmouth.edu/initiatives/mental-health-and-health-promotion/research">http://tdi.dartmouth.edu/initiatives/mental-health-and-health-promotion/research</a></td>
<td>Providing reminders</td>
<td>Interactive messages to be delivered during desperate periods of depression.</td>
<td>Psychologist and Matt Long</td>
</tr>
</tbody>
</table>
Appendix B

Telemedicine

Small Group Case Study Advisement Form

PRIMARY PROVIDER: Presentation of the Case

Group Number: 2  Date: May 20, 2014

History and background:

Matt Long, a 41 year old caucasian firefighter from New York, decided to better his life after witnessing the frightening destruction of the Twin Towers of the World Trade Center. He underwent intensive training, lost approximately 37 pounds of body weight and was able to complete more than 20 events including several triathlons and marathons. He was qualified for the most prestigious runner’s race known as the Boston Marathon where he earned the title ‘Ironman’. During a transit strike in New York City on December 22, 2005, Mr. Long was involved in a near fatal accident as he was cycling to work. He was struck by and sucked under a 20-ton bus that was making an illegal turn. He suffered multiple injuries, received 69 units of blood, underwent more than 40 reparative surgeries, and was discharged home after five months of hospitalization with a colostomy and an abdominal wound vacuum. Almost 22 months after the accident, he was readmitted for his numerous reconstructive surgeries that included colostomy reversal, scar tissue removal, and abdominal wound closure. Days after the surgery, Matt was discharged home with significant weight loss, muscle weakness, and many psychological problems. Group two addresses a period of time in which Matt has a colostomy reversal to the time he is able to ambulate well with the assistance of a cane. During this time, Matt’s reversal was a success and he eventually was able to tolerate a regular diet. Shortly after surgery, Matt decided to rid himself of his crutches and utilized a cane for assistance with
ambulation. On February 8, 2008, Mr. Long traveled to Arizona for rehabilitation. Within a five-week period, Long was able to intensify his exercise program, which resulted in less use of his cane. On March 14, 2008, Long was able to successfully run his first mile following his traumatic accident. In the midst of intense physical and psychological agony, fear, disappointments, and loneliness, Matt was able to accomplish his goal of running again.

**Problem List:**

**Primary.**

1. Anxiety
2. Potential depression
3. Potential mood instability
4. Potential acute stress disorder (related to acute illness)
5. Potential post-traumatic stress disorder (related to traumatic event)

**Secondary.**

1. Muscle weakness and muscle atrophy
2. Chronic pain
3. Polytrauma secondary to bicycle accident
4. Weight loss
5. Status post colostomy reversal
6. Fecal and urinary incontinence

**Motivational Interviewing:** In planning for telehealth encounters that include motivational interviewing, the provider would strive to identify Matt’s values. This conversation would be patient-centered while honoring Matt’s autonomy and would strive to be evocative by calling forth Matt’s own motivation and commitment. In this particular kind of conversation about motivation and change, the provider would utilize Matt’s foremost desire to become an Iron Man once again. The provider would also want to identify those values that may include importance of family and Matt’s desire to be a part of a support system for them in the future. He stated
“Going forward I wanted to rely only on a cane. It was a short-term goal to propel me toward my ultimate one: to run again” (Long, 2011, p. 214).

**Findings of Concern:** Matt has now received news he has been waiting on for the last two years regarding his recovery. His colostomy reversal was successful and now he can start back rigorous training and conditioning. Through the roads of recovery, Matt found himself quickly fatiguing and not in the best of shape in which he once was. As a result, Matt is stressed and has anxiety about his future goal of running again. Other signs of anxiety are shown when Matt states he does not want to spend the winter in New York again trying to dodge people in the winter streets and also looking out for buses. This brings back memories of what happened although he does not remember in detail. It seems that Matt is the only person that does not see progress. Matt’s friends, doctors and therapist all have seen his progression. Although there has been much progression Matt fails to see how far he has come and feels he has so much more to accomplish. Matt has been very hard on himself which can also make Matt’s road to recovery difficult. He still seems to keep a positive attitude but those moments of anxiety and stress can play a major role in the outcome of his recovery.

**Proposed technology:** The proposed technology to assist Matt with his psychological being and stress reduction is FaceTime (Apple’s version of Skype).

**Description:** FaceTime – Apple’s video calling technology originally developed for the iPhone but has now been expanded to support other Apple products. The product is a free download for those who own Apple products.

**Proposed use for Matt:** Goals: Reduce stress, balance emotion, improve performance, and maintain motivation.

**Intervention:** Psychotherapy, motivational interviewing.
Pricing: There are no costs specifically associated with using FaceTime beyond that of a normal Internet connection, as FaceTime uses your Internet in more or less the same way as other types of activities such as web browsing, checking e-mail, or watching videos. Note, however, that FaceTime can use a substantial amount of Internet bandwidth compared to other activities such as web browsing or sending e-mail, as it is essentially a streaming video service in the same way as YouTube or Netflix. Although data usage varies slightly due to video compression, FaceTime uses an average of about 5MB of data per minute of conversation, so an hour-long chat will consume around 300MB of data. If both devices are on a Wi-Fi connection, this additional bandwidth usage is unlikely to be of any real concern as even bandwidth-limited home Internet packages are generally measured in tens or hundreds of gigabytes per month. Therapy goals for Matt include: reduce stress, balance emotion.

1 Grant Funded Opportunity Number: HRSA-12-061

**ADVISOR/CONSULTANT: Response to Case Presentation**

Name of advisor(s): _Dr. Ken Hopper, MD_  
Group Number: _2_

Date: _5/27/2014_

**General recommendation:**

Matt faced tangibly what many face to some degree in life—a circumstance that is not expected and that could end with desperation. The recipe for overcoming adversity differs for each individual, but some common elements do exist: a deep sense of self (ego strength), energy/drive, and a vision that one can actually change. Several of Matt’s health care providers were able to tap into core Matt’s personality elements to assist in pushing him through to the next level of change. A noticeable mis-step was by Matt’s psychiatrist (ironically). It is an
interesting choreography of positive and negative images that pulled and pushed Matt.

Motivational techniques tap into the internal drives and fears in a way that propels the individual out of despair and into hope.

**Technology recommendation:**

It is interesting to contemplate Matt’s recovery and support in terms of technology. Caregivers can be much more available to patients when devices are used to close the proximity gap. What is interesting is that some of Matt’s inspiration came from family members. Could family have been even more available had they used “Skype” or other tools? Perhaps, but it is clear that personal involvement and proximity (especially by family) demonstrates a deep commitment.

While Matt was in the hospital and at home, he may have benefited from tele-therapy provided by a motivationally trained therapist. Also, if integrated into the “care team,” the psychiatric visit may have been different. If the psychiatrist is viewed as something more than a “pill pusher,” the outcomes can be very different. There are several national telemedicine companies providing targeted consultations with patients in facilities. There are new companies providing the backbone of telemedicine while allowing local patients and providers to be paired. A recent article regarding “Health Buddy” in the VA system illustrates a more automated, but interactive process that allows connectivity throughout the day and night. This could have been very valuable for Matt’s deeply desperate times.