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Translational Practice: Outcome Tool Implementation in an Inpatient Rehabilitation Facility

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Translational Practice: Outcome Tool Implementation in an Inpatient Rehabilitation Facility

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Abstract

The purpose of this Doctoral Capstone Experience (DCE) was to provide the Rehabilitation Hospital of Indiana (RHI) with an outcome measure to better quantify upper extremity recovery following a stroke or brain injury. This need was identified as a result of conversations with physicians, payer sources, and community partners that requested additional information to justify the need of services for the patients served at RHI. As a result of this need, the Fugl-Meyer Assessment for the Upper Extremity (FMA-UE) was identified as the most appropriate assessment to implement. The Knowledge to Action (KTA) framework provided a sequence of steps that aided in the implementation of this outcome measure. Utilizing the KTA framework over the course of 16 weeks, therapists were educated on the purpose of the DCE and FMA-UE, and practiced the FMA-UE with patients. At the conclusion of the DCE, it was determined that the FMA-UE was beneficial and provided additional information to further strengthen the profession within this setting. The result of this DCE is better use of evidence-based practice through implementation of the FMA-UE, therefore resulting in better care for patients receiving inpatient rehabilitation and outpatient services at RHI.

Keywords: Implementation science, translational practice, Fugl-Meyer, inpatient rehabilitation

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In the field of occupational therapy, there is a large gap between the time research is performed and the time effective interventions are put into practice. Evidence shows that the gap between publication of evidence-based intervention and implementation into practice is approximately a 20-year period (Brekke, Ell, & Palinkas, 2007; Glasgow & Emmons, 2007). It is often a misconception that new research practices are being implemented among practitioners (Malec & Swan, 2017). As a result of practitioners not utilizing research-based interventions, patients do not receive evidence-based care 30-45% of the time (Clark, Park, & Burke, 2013). Even more concerning is that patients may receive care that is not necessary or even potentially harmful (Clark, Park, & Burke, 2013). In an effort to bring evidence-based research into practice, the term “implementation science” has developed. Implementation science is defined as “the scientific study of methods to promote systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services and care” (Eccles & Mittman, 2006). Using implementation science, new and effective research can be translated into practice, which in turn provides patients with better care and more individualized treatments (L. Swan & K. Ruggles, personal communication, January 8, 2018).

Implementation science, also known as translational science, has become a top priority for the National Institutes of Health (NIH; Brekke, Ell, & Palinkas, 2007). Implementation science has helped with application of evidence-based practice (EBP; Bauer et al., 2015). The need for implementation science is great, particularly in health care settings, but often there is no formula or protocol for implementation of these EBP (Brekke, Ell, & Palinkas, 2007). The

purpose of implementation science is to assist with the dissemination and implementation of EBP into everyday practice (Brekke, Ell, & Palinkas, 2007). A planned action model is also necessary so that information is presented in a systematic approach rather than just relying on diffusion of information (Metzler & Metz, 2010). The process of implementation science requires a thorough understanding of the individual, institutional, and systematic factors that will either facilitate or obstruct these processes (Brekke, Ell, & Palinkas, 2007). The individual factors include those on the frontline that may assist or obstruct the implementation of research into practice. Individual factors also include the frontline individual's commitment to change. The institutional factors can include stakeholders or individuals in positions of authority that help to drive the translation of research into practice. For example, if therapists are not on-board with implementation of a certain type of research then the carryover is likely to be poor. Systemic factors may be those relating to the facility or outside factors that impact knowledge translation (Brekke, Ell, & Palinkas, 2007). Communication, collaboration, and consensus are all necessary for effective implementation of EBP (Brekke, Ell, & Palinkas, 2007).

At the Rehabilitation Hospital of Indiana (RHI), the leadership team has a desire to enhance their current evaluation process completed by occupational therapists (OTs, L. Swan & K. Ruggles, personal communication, January 8, 2018). The hospital currently utilizes the Functional Independence Measure (FIM) and Inpatient Rehabilitation Facility-Patient Assessment Instrument (IRF-PAI) as their primary outcome measures (L. Swan & K. Ruggles, personal communication, January 8, 2018). The OTs also utilize other standardized assessments such as grip and pinch strength dynamometer, 9-hole peg test, and box and blocks. While these assessments provide normative data, they do not always provide a true depiction of upper extremity recovery (L. Swan & K. Ruggles, personal communication, January 8, 2018). In a

study by Klein & Hopper (2013), it was determined that the FIM did not demonstrate functional change of upper extremity (UE) from admission to discharge. Tietjen-Smith et al. (2006) determined that grip strength is not always a true predictor of functional capacity. Therefore, it is important that OTs complete outcome measures that reflect true progress of the individual.

In an effort to remain evidence-based and to be a primary provider for individuals requiring rehabilitation, RHI has determined that an additional outcome measure for upper extremity recovery needs implemented (L. Swan & K. Ruggles, personal communication, January 8, 2018). A majority of the population at RHI are individuals recovering from various types cerebrovascular accidents (CVAs), or strokes (L. Swan & K. Ruggles, personal communication, January 8, 2018). As a result of a CVA, individuals often lose function in one or both upper extremities (Gladstone, Danells, & Black, 2002). Nearly 70-80% of individuals post-CVA have hemiparesis, which is the most common deficit among CVA survivors (Gladstone et al., 2002). While the FIM looks at function, OTs do not currently utilize an outcome measure that specifically assesses motor recovery of the upper extremity.

The Fugl-Meyer (FMA) is an assessment developed in 1975 by Alex Fugl-Meyer that assesses the motor recovery of an individual following a stroke (Gladstone et al., 2002). At the time the FMA was developed, most assessments focused on measuring disability and one's capacity to complete activities of daily living (ADL) independently (Gladstone et al., 2002). The authors of the FMA identified that there was not an assessment that looked at motor recovery in a standardized manner (Gladstone et al., 2002). Other assessments that are more objective in nature, such as the Barthel Index (BI) and FIM, do not adequately portray the dynamic process of motor recovery and are therefore less likely to identify change (Gladstone et al., 2002). Authors recognized that the motor recovery in both the upper and lower extremity typically proceeds in a

predictable manner (Gladstone et al., 2002). For example, in regard to the upper extremity, movement returns in a proximal to distal manner: shoulder, elbow, wrist, hand (Gladstone et al., 2002). The observed manner of recovery is based on the Brunnstrom stages of motor recovery (Gladstone et al., 2002). The FMA upper extremity (FMA-UE) is a shortened version of the larger FMA which contains categories including: motor function, sensory function, balance, joint range of motion, and joint pain. The FMA-UE only includes the motor function category with the upper extremities (Shirley Ryan Ability Lab, n.d.). Based on recent research, the FMA-UE is a valid and reliable measure to use for individuals in the rehabilitation setting after a CVA (Kim et al., 2012). The FMA-UE is a free, observation-based assessment that quantifies motor recovery following a CVA (Gladstone et al., 2002). The FMA-UE contains subsections including: reflexes, movement observation, grasp and coordination (Gebruers, Truijen, Engelborghs, and De Deyn, 2014).

Although there are numerous types of CVAs, and everyone progresses differently, the FMA-UE gives a map for expected recovery (Veloze & Woodbury, 2011). The FMA-UE is considered a comprehensive, quantitative assessment of motor impairment after a CVA (Gladstone et al., 2002). Though this assessment was designed for CVAs, some research has also shown that it is effective with diagnoses such as Multiple Sclerosis and traumatic brain injury (Platz et al., 2005). This assessment allows therapists to develop their treatments around expected recovery to help the patient progress in the best way possible (Veloze & Woodbury, 2011). The FMA-UE has been shown to be highly sensitive as well as a reliable predictor of upper extremity recovery and general disability (Gebruers, Truijen, Engelborghs, & De Deyn, 2014). The FMA-UE also demonstrates high levels of construct validity, and responsivity (Thompson-Butel, Lin, Shiner, & McNulty, 2015; Gladstone et al., 2002). In addition, it

demonstrates efficacy with individuals recovering from a CVA (McDonnell, Hillier, & Esterman, 2013). For these reasons, the FMA-UE was determined to be an effective outcome measure to implement during evaluations.

Although the FMA-UE is an excellent tool to implement into evaluations, the translation of this research into practice is difficult. The uptake of EBP is often impeded due to several barriers including: lack of funding, time, technology, the requirement of a controlled environment, and/or burden on therapists (Bauer, Damschroder, Hagedorn, Smith, and Kilbourne, 2015). Therapists are encouraged to read peer-reviewed journals to stay up to date with EBP which is important, however the information gained is not easily implemented, according to research (Grol & Grimshaw, 2003). It is often stated that peer-reviewed articles contain the highest level of evidence; however, these publications do not always provide practical ways of implementation and instead focus solely on the research context (Metzler & Metz, 2010). Research is more likely to be implemented when a planned action model, such as the Knowledge to Action (KTA) framework, is utilized (Metzler & Metz, 2010).

In conjunction with the OT manager and executive director of therapies, the priority of this DCE was to implement the FMA-UE and educate the therapists on proper administration. This occurred through meetings and one-on-one interaction. The final steps of the needs assessment, evaluating and identifying alternative solutions, and creating a plan of action included multiple discussions with the OT manager and executive director of therapies that identified how to carry out the implementation of this assessment. We determined that I should first implement the tool myself as a way to identify any major obstacles, followed by the therapists on the outcome committee, and finally by the remaining therapists. This included the continued identification of the problem along with the review of knowledge in regards to the

problem. The information gathered at this point of the KTA framework is then utilized to help with the adaptation to local context which occurs during the implementation phase.

Occupational therapists are taught that the top-down approach to treatment places the patient at the center of the entire OT process (Doucet & Gutman, 2013). The bottom-up approach is opposite in that it focuses more so on deficits and impairments and how those impact daily function (Doucet & Gutman, 2013). In this era where healthcare is constantly changing, it is important that we demonstrate the importance of our profession. Reimbursement agencies and insurance companies want objective measurements for how a patient is progressing (Doucet & Gutman, 2013). Objective measurements allow these agencies to understand patient progression without having to fully understand occupational therapy and the meaning of the occupation-based language that we know so well (Doucet & Gutman, 2013). Due to lack of knowledge, individuals and parties involved in reimbursement may not understand the distinct value of our profession (Doucet & Gutman, 2013). While we should continuously advocate and educate about our profession, we must also ensure that our services are able to be reimbursed. While the FMA-UE and inpatient rehabilitation are well established within the OT profession, the need for objective measures to demonstrate progress is not widely implemented and therefore considered emerging (Kroll & Fisher, 2017). It is also important for hospitals and outpatient centers to utilize comprehensive assessments that demonstrate patient progress from the time an individual is in the hospital to the time they are discharged from outpatient therapy, which is attainable with the FMA-UE (Jongbloed & Wendland, 2002). Therefore, objective values allow both parties to meet in the middle, which is why RHI has deemed this DCE so important.

RHI is a traditional practice setting of inpatient rehabilitation and outpatient therapy. One of the biggest reasons for implementing a new outcome measure, specifically among the CVA

population, is that it provides numeric data that indicates a patient's progress toward projected outcomes (Levine, 2009). This score is then translated to recovery potential for an individual (L. Swan & K. Ruggles, personal communication, January 8, 2018). With UE recovery after a CVA, it is easy to see a plateau in function after approximately three months (Levine, 2009). However, the FMA-UE is able to capture small, incremental changes in UE use (Levine, 2009). In the first month of the DCE, it became apparent that the physicians want to know what changes are happening with their patients, especially those small changes that may not be noticed through functional measures.

The Knowledge to Action (KTA) framework can be used for implementation of evidence-based research into practice, and therefore is a beneficial theoretical background for this project (Field, Booth, Ilott, & Gerrish, 2014). The KTA consists of two factors: knowledge creation and the action cycle, both of which contain their own specific components (see Figure 1; Field, Booth, Ilott, & Gerrish, 2014). The knowledge creation factor is funnel shaped and consists of three components. The top portion of the funnel contains the knowledge inquiry component which is considered "first generation knowledge" (Graham et al., 2006, p. 18). This includes all the accessible and non-accessible information in regards to the topic of interest (Graham et al., 2006). The second portion of the funnel is the knowledge synthesis component, which is "second generation knowledge" (Graham et al., 2006, p. 19). This part of the process involves the utilization of reproducible methods to "identify, appraise, and synthesize relevant studies or information to the specific question" (Graham et al., 2006, p. 19). The final component of the knowledge creation funnel, knowledge tools/product (also called "third generation knowledge") is utilized to display found knowledge in a format that is clear, concise, and easy to

use (Graham et al., 2006, p. 19). This portion also provides recommendations for stakeholders on what change should occur (Graham et al., 2006).

The second factor of the KTA framework consists of the action cycle. Within this cycle there are seven steps for implementation of knowledge into practice (Graham et al., 2006). The first step is to “identify a problem that needs addressing” and “identify, review, and select the knowledge or research relevant to the problem” (Graham et al., 2006, p. 20). This step includes determining a problem and analyzing the problem while reviewing relevant research (Graham et al., 2006). The second step includes “adapting the identified knowledge or research to the local context” (Graham et al., 2006, p. 20). At this step individuals or groups involved take the information obtained and adjust it to their own environment and/or setting (Graham et al., 2006). The third step is to “assess barriers to using the knowledge,” which involves assessing for any obstacles or barriers that may prevent acceptance of knowledge (Graham et al., 2006, p. 20). The fourth step is “select, tailor, and implement interventions to promote the use of knowledge” (i.e. implement the change; Graham et al., 2006, p. 20-21). This phase involves applying the information into the specific practice setting (Graham et al., 2006). The fifth step includes “monitoring knowledge use” which involves assessing and measuring changes in knowledge (Graham et al., 2006, p. 21). The sixth step is to “evaluate the outcomes of using the knowledge” at which point it should be determined if the intervention chosen has brought about the desired change or if it is time to reevaluate (Graham et al., 2006, p. 21). The final step is to “sustain ongoing knowledge use” which involves maintenance of the new, implemented knowledge (Graham et al., 2006, p. 21).

In Canada, the KTA framework has been utilized with cancer patients. A team of individuals comprised of physicians, therapists, and researchers utilized the framework to

implement new guidelines for patients with breast cancer (Munce et al., 2013). Similarly to this DCE, the KTA framework assisted with implementation and evaluation of a new tool. These authors implemented a screening tool in a similar manner to the implementation of the FMA-UE. The authors found that this framework is beneficial for dissemination of new information in the healthcare setting which further demonstrates the use of the KTA framework for this DCE (Munce et al., 2013).

The process of translating knowledge to practice is overwhelming and daunting. However, Graham et al. (2006), provides a step-by-step guide that yields a foundation for implementing knowledge into everyday practice. The purpose of this DCE is to assist with implementation of the FMA-UE at RHI. Therefore, this theoretical base of the KTA framework is ideal for this project as the focus is the application of research to occupational therapy evaluations.

Screening and Evaluation

In order to fully identify a problem, a needs assessment must first be completed. A needs assessment includes: collecting relevant data, analyzing and synthesizing data, completing a strengths, weaknesses, opportunities, threats (SWOT) analysis, determining priorities, evaluating and identifying alternative solutions, and creating a plan of action (AOTA, n.d.; Brownson, 2001). The beginning of a needs assessment, collection of relevant data, should include discussion with those involved to identify where the problem lies (Brownson, 2001). In regards to the KTA, the needs assessment falls under the *identify and review of knowledge* step in the action cycle of the framework. At RHI, the data collection portion occurred prior to the beginning of this DCE. The leadership team explained several months prior to the start of the DCE that the evaluation system needed to be enhanced through implementation of an additional

assessment tool that targeted the post-CVA population. At the start of the DCE, the leadership team determined that an assessment to quantify upper extremity recovery would be beneficial in addition to the assessments already utilized. Previously, the evaluation process did not include a standardized assessment to address recovery of the upper extremity post-CVA (L. Swan & K. Ruggles, personal communication, January 8, 2018).

After discussion regarding the focus of the DCE, the leadership team determined that the FMA-UE would be most applicable to RHI as a majority of patients are in rehabilitation for deficits after a CVA (L. Swan & K. Ruggles, personal communication, January 8, 2018). Analyzing and synthesizing the data was the next step of the needs assessment. This included understanding RHI's current OT evaluation process. From observing, it was reinforced that an assessment to focus on upper extremity recovery would add value to the current OT evaluation process. Based on observations, physicians appreciate receiving information from assessments that quantify recovery because it is an easy way to see if patients are progressing. This observation supports the use of the FMA-UE as an additional outcome tool because it allows OT to quantify an individual's recovery post-CVA (Woytowicz et al., 2017). During the first few weeks of this DCE, I observed several OT evaluations. From observation, I noticed that the focus is very much on an individual's functional status. While functional status is extremely important to OT, and sets our profession apart, it can be difficult to demonstrate measurable patient progress (L. Swan & K. Ruggles, personal communication, January 8, 2018). Demonstrating measurable patient progress can be difficult to do, because while it is easy for therapists to see small changes, standardized assessments often do not capture those small changes in the recovery process (Levine, 2009). The FMA-UE provides numeric values to recovery of the upper extremity after a CVA (Woytowicz et al., 2017). The numeric values help demonstrate to

physicians, insurance companies, and community partners that the treatment provided at RHI is efficacious in assisting with recovery following a CVA (L. Swan & K. Ruggles, personal communication, January 8, 2018).

Along with observing evaluations, I also met with the outcomes committee. This committee consists of an OT from each of the four units (complex medical, spinal cord injury, stroke, and brain injury), two outpatient OTs, the executive director of therapies, and the OT manager. During the meeting, therapists voiced their concerns and suggestions regarding implementation of a new outcome tool. For example, the therapists were concerned that this tool cannot be used across all units; however, after discussion it was determined that it is not possible to find an outcome measure that is suitable for the wide variety of populations therapists treat.

The next step of the needs assessment includes a SWOT analysis (see Figure 2), which identifies strengths, weaknesses, opportunities and threats. Some strengths are that the FMA-UE will allow therapists to demonstrate patient progress in quantitative, concrete way. The FMA-UE also is backed by literature stating its practical use in a multitude of settings (Asher, 2014). A weakness of the FMA-UE is that it is only applicable to a few populations including CVA, brain injury, and Multiple Sclerosis (Shirley Ryan Ability Lab, n.d.). An opportunity is that the implementation of this new outcome measure will allow RHI to participate in research with other institutions and hospitals (L. Swan & K. Ruggles, personal communication, January 8, 2018). Research is highly emphasized at RHI and is constantly being completed. Some of the therapists at RHI complete research full time, in an effort to increase the value of various disciplines. The hospital often collaborates with other hospitals and universities such as the Shirley Ryan AbilityLab (formerly the Rehabilitation Institute of Chicago), Mary Free Bed Rehabilitation Hospital, and Washington University in St. Louis (L. Swan & K. Ruggles, personal

communication, January 8, 2018). Therefore adoption of this assessment would allow for collaboration with other therapists and hospitals. The FMA-UE also encourages therapists to be more evidence-based in how they treat their patients, which is considered another opportunity. A threat with the implementation of this outcome tool is that there could be push back from therapists with the addition of another component to the evaluation process. Therapists are concerned that there already is not enough time in an evaluation to complete all necessary steps and that this assessment will be more work. The results of the SWOT analysis were then discussed with the OT manager and the executive director of therapies who provided input and direction on how to manage the concerns and promote the strengths and opportunities.

Implementation

The implementation phase of this project includes application of the FMA-UE to practice. Utilizing the KTA framework, I first identified that I was in the “adapt to local context phase” (Graham et al., 2006). I began by taking steps to prepare for implementation of the FMA-UE. This planning and preparation included watching videos on appropriate administration, reading research articles, development of a thorough understanding of the FMA-UE manual, and continuous practice of the assessment. The most difficult aspect was practicing the assessment. In inpatient rehabilitation, patients receive three hours of therapy per day, along with time blocks for nurses, physicians, psychologists, psychiatrists, chaplains, and recreational therapists. Therefore, it was difficult to find time to practice the FMA-UE as the patient was often resting or meeting with another hospital employee. It was also difficult to find a standardized approach to administration of the FMA-UE. A large majority of the videos and resources all administer the FMA-UE in a variety of ways. Therefore, I had to develop a thorough understanding of the

manual for the FMA-UE, and then find a video or other resources that aligned with appropriate administration

After I developed a comprehensive understanding of the FMA-UE I brought it to the outcomes committee. At this meeting, the FMA-UE was presented along with a demonstration on how it is to be administered. The program planning piece comes into play in regards to the preparation for this meeting. The planning included development of a handout with quick facts as well as additional information to provide foundational knowledge of the assessment. This helped to answer some of the therapists' initial questions about the assessment, such as: who is it for, when should it be administered, why is this tool being utilized, etc. A manual with step-by-step instructions was also provided to each therapist to assist with administration and scoring. In addition, pictures for positioning were included in the handouts.

During a weekly meeting with my site supervisors, we discussed some concerns with how receptive the staff will be to implementation of a new assessment. My site supervisors encouraged me to develop a SWOT analysis specifically for the outcomes meeting that I presented to the therapists on the committee. This preemptively identified barriers and developed support for the assessment before it was implemented with the rest of the team. I also provided articles and research prepared that served as supplemental resources for the outcome committee if they desired to dive into the research themselves. Information regarding clinically important statistics for measured progress was also brought to the therapists. For example, a statistically significant increase in score on the FMA-UE is 4.25-7.25 points for a chronic CVA, and 9-10 points for an acute CVA (Page, Fulk, & Boyne, 2012). Following the meeting, I continued to implement the assessment, however it was alongside the OTs that will implement it during their evaluations, initial treatments, and discharges. The therapists were allotted a couple weeks to

trial the assessment, with my guidance, so that they became comfortable with knowing when and how to administer it. During this trial time, the therapists were asked to identify any additional obstacles that were addressed and resolved prior to educating the remaining group of OTs.

The bulk of the implementation phase occurred with working one-on-one with the therapists to help develop an understanding of the FMA-UE. However, to be successful with implementation, certain leadership qualities were required. For example, during the planning phase I had to advocate for myself and for the entire DCE. Many therapists did not fully understand my role, so when possible, I would engage in conversation and explain my project. This allowed me to develop some rapport with the therapists, as well as prepare them for what was to come. I also observed several evaluations during the first 6 weeks, which helped me develop an understanding of how therapists complete evaluations. This allowed me to see how the FMA-UE could be implemented into what they already do without creating extra burden on the OTs. The direct service provision model guided my interaction with both the therapists and patients. I worked directly with both parties while using this model to guide my DCE.

During the DCE, I also attended several meetings. These meetings were with therapists, physicians, and leadership teams. I was often asked to provide information regarding my project and my role at RHI. This allowed me to explain my purpose and help develop a team mindset between myself as a student and other parties involved. During outcome committee meetings, I also created the agenda and facilitated conversation regarding the DCE and implementation of the FMA-UE. This aspect of the DCE required public speaking skills and the ability to explain my role, as well as the reason for the FMA-UE, which is another leadership quality. Another aspect of my responsibility was to identify patients who were candidates for the FMA-UE and determine appropriate times to see them. Clinical reasoning was required to recognize which

patients were appropriate and which were not. I would often coordinate with therapists and nursing staff to ensure that everyone was on board with my project. I also discussed the status of patients with the OTs to determine if they were appropriate for an FMA-UE assessment. Because the DCE is self-directed, I created timelines for myself and came to meetings organized and prepared, all of which are qualities required for a leadership role. This experience often brought me out of my comfort zone and required me to demonstrate leadership qualities in how I interacted with therapists and other individuals.

The overall focus of my DCE was to assist with implementation of FMA-UE as a new outcome measure at RHI. Staff development coincides perfectly with the purpose of my project. I was in charge of educating the staff and ensuring that they developed an in-depth understanding of what all is entailed within the FMA-UE. The education was important to ensure that the therapists correctly administer the assessment. Professional development is incredibly important at RHI as the staff are required to set professional development goals (L. Swan & K. Ruggles, personal communication, February 8, 2018). Therapists are encouraged to attend continuing education courses, collaborate with other disciplines, pursue specializations, and participate in research (L. Swan & K. Ruggles, personal communication, February 8, 2018). At RHI, the leadership team is constantly striving to be a frontrunner for inpatient rehabilitation in the Indianapolis area. In this community, participating in research is considered essential to leadership because it ensures the best care possible. Therefore, through staff education and training with the FMA-UE, I assisted with staff development and facilitation of quality care for the patients served at RHI.

Discontinuation

The discontinuation phase of this project occurred during the last four weeks of the Capstone experience. At that point in time, the OTs received education regarding the FMA-UE and instruction for its implementation. The discontinuation aspect focused on passing the information to the OTs at RHI and allowing them the opportunity to regularly implement the FMA-UE into their evaluations, initial treatments, and discharges. The process of discontinuation contained a multitude of steps. Prior to discontinuation, the OTs on the outcome committee agreed that the assessment was ready to be introduced to the remaining therapists. Then an educational meeting occurred in which the information was presented to the remaining OTs who then began implementing the assessment. The first part of the implementation phase occurred with just the outcome committee. During this second part of the implementation phase I worked with the therapists to ensure appropriate administration. I also began utilizing a fidelity measure that I created to initiate the discontinuation process. A fidelity measure is a tool used to ensure that a change is implemented appropriately and accurately (Malec & Swan, 2017). In the case of this DCE, the fidelity measure was utilized to ensure that therapists were administering the FMA-UE in the correct, standardized manner, ultimately striving for continuous quality improvement. From that point, I then worked with the therapists to correct any changes that needed to be made during administration. The last four weeks of my DCE included finalizing implementation and ensuring that a continuation plan was in place. Continuation focuses on sustainability, which is essential for this outcome measure so that it is continued to be utilized beyond the completion of this DCE.

Sustainability is needed to ensure that RHI is continuously meeting the needs of both society and their patients. The FMA-UE meets the needs of society by further justifying the need

for OT with the patients that are served. As healthcare continuously changes, it becomes more and more important for therapists to show that the treatment they provide is beneficial to their patients. In regards to the FMA-UE, this assessment provides quantitative data that demonstrates patient progress, therefore showing the extensive need for OTs among these populations. Along with meeting the needs of society, the need of the patient is the main priority. This assessment allows the patient to see progress from the time they are an inpatient, to when they go home, and all the way through outpatient therapy. The therapists and leadership team have stated that the responsibility of ensuring sustainability, will fall to them upon completion of this DCE.

Outcome

The outcome of this DCE is continued use of the FMA-UE during evaluations and discharges. The purpose is to provide better care to the patients that are served by RHI. The outcome of providing better patient care will not be identified during the time of the DCE because an important piece is sustainability. Sustainability of this outcome measure cannot be established in 16 weeks (L. Swan & K. Ruggles, personal communication, January 8, 2018). It is estimated that this project will take a minimum of six months to complete, which is beyond the timeframe for the DCE (L. Swan & K. Ruggles, personal communication, January 8, 2018). There is a possibility for another DCE student to continue in this project; otherwise, it will become the responsibility of the site mentors and outcome committee (L. Swan & K. Ruggles, personal communication, January 8, 2018).

The KTA framework was utilized to ensure that the outcomes have been met. The goal was to reach the “select, tailor, implement interventions” phase. If that phase was met, then the goal of this DCE will have been accomplished. This phase included the use of the FMA-UE by therapists across all units, among patients with specific neurological conditions. The final stage

of the FMA-UE is “monitor knowledge use.” Because this DCE is only 16 weeks, this will occur past the completion of this DCE. As noted, the outcome committee has stated that they will take ownership upon completion of the DCE to ensure sustainability of this FMA-UE.

Overall Learning

Throughout the DCE, it was my responsibility to maintain open communication not only with my site mentors, but also therapists, patients, nurses, and my faculty mentor. I communicated both verbally and non-face to face. With my site mentors I learned that e-mail communication was most effective as they are both in managerial positions and not always available to discuss topics, in person, related to my experience. I found that with therapists the opposite was true. Few therapists are able to check their email regularly throughout the day; therefore, I would try and catch them in the mornings or at lunch time when I knew they would not be on their way to see a patient. This proved most effective and also allowed me to build rapport with the therapists as that is easier to accomplish through conversation than through written communication. I also communicated verbally with patients in order to build rapport. With the purpose of my DCE, I only saw patients typically during their first or second day and then the day before their discharge. However, the initial meeting still allowed me to get to know them briefly and explain the purpose of the assessment I was administering.

The various styles of communication I utilized will be extremely beneficial when I enter practice. As a student, I have observed the most effective way to communicate with a multitude of people, and I have learned how to identify the most effective communication style. It is likely that this will change from setting to setting and facility to facility, however I now have the tools to quickly identify what form of communication is the most effective.

The team at RHI does a fantastic job of working together to provide the best care possible to their patients. Throughout the day, therapists are continuously discussing how patients are progressing. They coordinate treatment plans and collaborate on what they can do to make the patient as safe and independent as possible. The therapists work together to come up with new treatment ideas to remain evidence-based. The managers also demonstrate teamwork, but in a slightly different capacity. They each manage their own units and departments; however, they meet together on a weekly basis to collaborate on ways to better the workplace. Each manager also possesses a multitude of leadership skills. One of the most prominent skills I observed is communication, both among therapists and managers. The managers are continuously finding ways to improve communication with their employees. As a result of input from therapists, the leadership team determined they want to continue striving for better communication. It was determined that an action plan needed to be created with input from the therapists so that they are meeting their needs. Throughout this planning process, the team utilized Lean Six Sigma to guide their development of an effective and efficient quality improvement process.

As a DCE student, I was often placed in the middle and saw both sides of conflict. I worked very closely with managers and the leadership team, while also communicating and being in the vicinity of therapists on a daily basis. I would often hear of growth areas from both sides and how each group of individuals (managers and therapists) believed things should be improved. This allowed me to observe the process for conflict resolution. During my time at RHI, an issue arose that created tension between the therapists and leadership team. During weekly leadership meetings, I listened to conversations regarding this issue and how those in positions of power were working to resolve the issue. Over the course of a few months, I saw how even though it was not always evident to the therapists, the managers were working with

individuals higher up in the RHI management team to advocate for them and their profession. Once the therapists were made aware of the resolution to their problem, they were able to see, that though it is a slow process, the managers do their best to fight for the therapists' wants and needs.

Personally, I further developed leadership skills such as: organization, time management, communication, resourcefulness, and project management. During my first meeting with my site mentors, they told me that project management would be the biggest focus of my DCE. They left it up to me to determine timelines, such as implementation, education, and discontinuation. They were there to guide if needed but encouraged me to take ownership and only utilize them as a resource. As a result, I continuously had to advocate for my project and why it was important, through how I communicated with others. Culture changes can be difficult, so I had to learn the balance of implementing a new assessment without creating an extra burden on both the therapists and managers. I also had to advocate for myself with other professionals. I often explained my role as a student to physicians, nurses, and other disciplines in a way that differed from that of a typical student role. Throughout this experience, I gained all of these qualities and skills which will in turn assist me in becoming a successful occupational therapist.

In conclusion, I gained a multitude of skills and experiences throughout my DCE. The purpose was to provide the Rehabilitation Hospital of Indiana (RHI) with an outcome measure to better quantify upper extremity recovery following a stroke or brain injury. I accomplished this goal through implementing the FMA-UE into the evaluation and discharge process. As a result of this new assessment, RHI is better equipped to treat individuals after a CVA or brain injury, as well as participate in research to further advance the profession.

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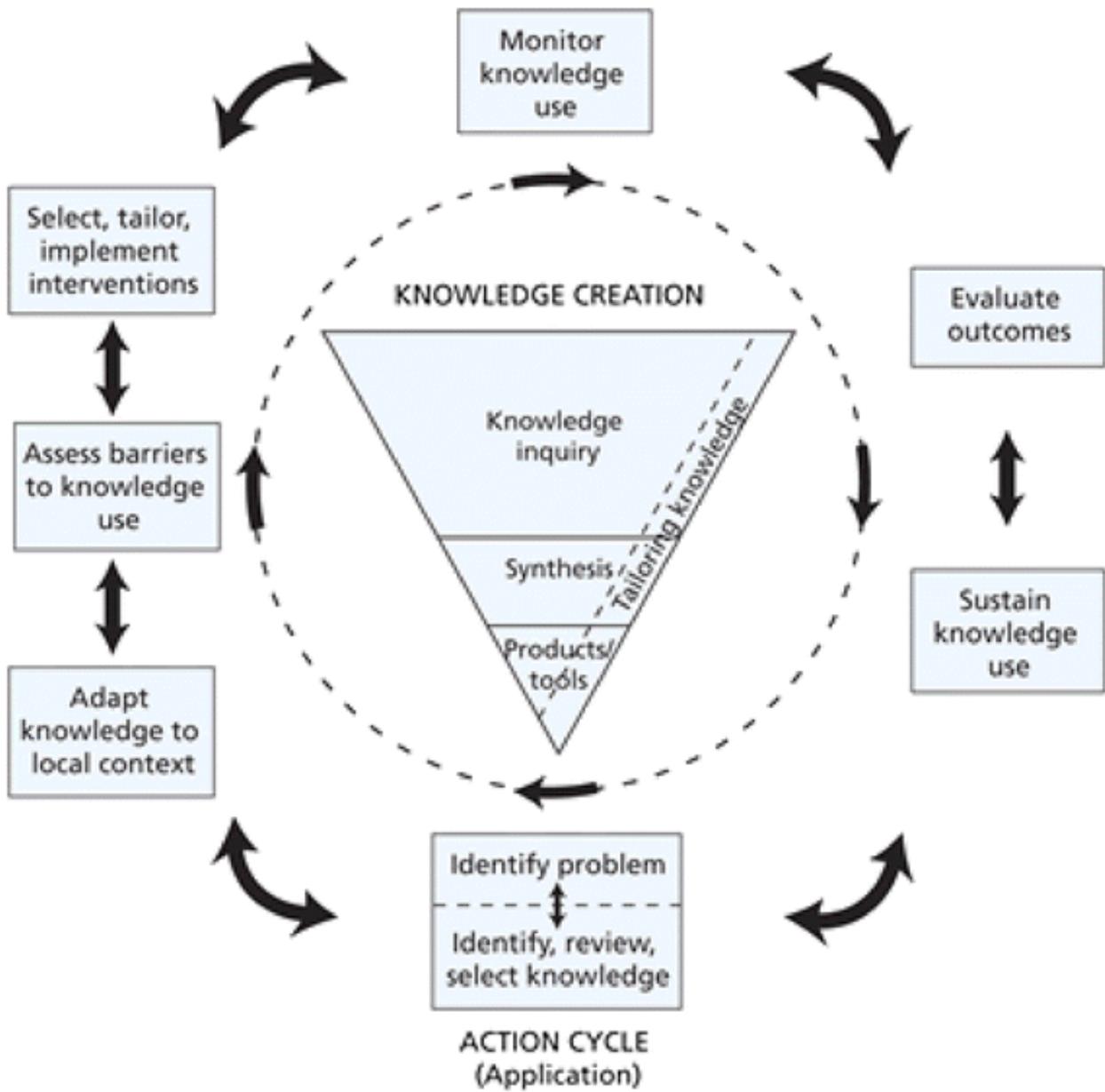


Figure 1. Knowledge to Action Wheel demonstrates how evidence-based practices can be implemented through a step-by-step process (Field et al, 2014).

Strengths	Weaknesses
<ul style="list-style-type: none"> • Highly skilled therapists • Strong committee • Excellent facility • Evidence based assessment • Helpful for a high percentage of the patients at RHI (CVA, brain injury, neuro conditions) • Provides quantitative data to physicians, payers, and community partners for benefits of OT and potential recovery • Widely used and internationally accepted assessment 	<ul style="list-style-type: none"> • Does not apply to all populations • May be difficult to administer as many patients are lethargic or confused • Deficit/impairment focused • May not demonstrate improvements in patients with higher level hand function
Opportunities	Threats
<ul style="list-style-type: none"> • Participation in research • Utilization of EBP • Allows for greater communication between therapists and physicians • Stand out from other surrounding rehab centers 	<ul style="list-style-type: none"> • Long-term use/sustainability • Push back/culture change • Timeline • Competition from other local healthcare organizations

Figure 2. The SWOT analysis demonstrates various aspects involved with implementing change (AOTA, n.d.; Brownson, 2001).

	Fidelity Measure (place an "x" in corresponding box)		
	Completed Correctly	Completed Incorrectly	Did Not Complete
Upper Extremity	2	1	0
<i>Part I</i>			
Flexor Reflex (while seated)			
Extensor Reflex (while seated)			
<i>Part II</i>			
Flexor Synergy			
Shoulder Retraction			
Shoulder Elevation			
Should Abduction (90 degrees)			
External Rotation			
Elbow Flexion			
Forearm Supination			
Extensory Synergy			
Shoulder Adduction/Internal Rotation			
Elbow Extension			
Forearm Pronation			
<i>Part III</i>			
Hand to Lumbar Spine			
Shoulder Flexion (0-90)			
Pronation-Supination			
<i>Part IV</i>			
Shoulder Abduction (0-90)			
Shoulder Flexion (90-180)			
Pronation/Supination			
<i>Part V</i>			
Biceps, Triceps, Finger Flexors			
Wrist			
Stability at 15 dorsiflexion			
Repeated dorsiflexion/volar flexion			
Stability at 15 dorsiflexion			
Repeated dorsiflexion/volar flexion			
Circumduction			
Hand			
Mass Flexion			
Mass Extension			
Grasp			
A-flexion in PIP & DIP			
B-thumb adduction			
C-opposition			
D-cylinder grip			
E-spherical grip			
Coordination/Speed			
Tremor			
Dysmetria			
Time (circle)			
Total Correct (66 max)			

Figure 3. A fidelity measure ensures that change is implemented appropriately and allows for the monitoring of knowledge use (Malec & Swan, 2017).