



Knowledge Translation Strategies: Implementation of Outcome Measurement into Practice

Jennifer Moore PT, DHS, NCS

Carolyn Baum, PhD, OTR, FAOTA

Knowledge Translation



- Knowledge translation (KT) is a multidimensional, active process of ensuring that new knowledge gained through the course of research improves the lives of people with disabilities and furthers their participation in society.

National Institute of Disability and Rehabilitation Research (NIDRR)-Our Funder



- NIDRR has adopted the principle and practice of KT to guide its activities for maximizing the adoption and use of knowledge and products generated from NIDRR-funded research and development
- NIDRR says it is important to ensure that valid and reliable outcome measures are adopted and used by their intended users, not just that measures are developed and available. These measures serve as the foundations of evidence-based knowledge and are crucial for demonstrating intervention effectiveness.

NIDRR: Reliability and validity considerations when adoption and use of an outcome measure is the goal

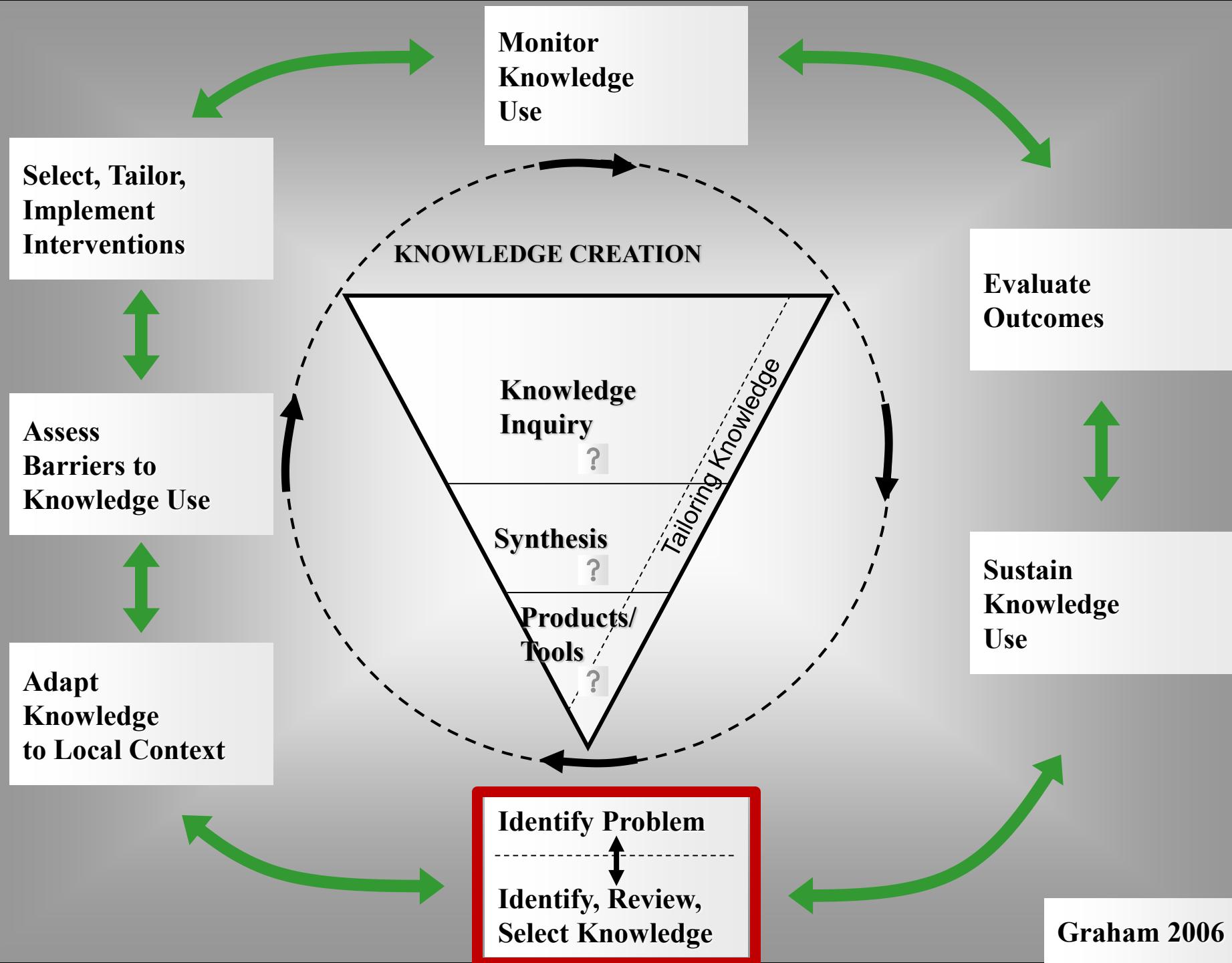


- Does this measure address well-identified needs, and in what contexts?
- Is it user-friendly?
- How does it fit with workflow and other constraints in practice?
- Can practitioners use it appropriately and successfully without assistance from the developer?
- What incentives for the practitioner, practice organization, and other stakeholders exist to adopt and use the measure?

NIDRR: Reliability and validity considerations when adoption and use of an outcome measure is the goal



- What is the advantage of a new measure over earlier measures?
- Is the measure acceptable to those with whom it will be used?
- Would the measure generate “meaningful” results from practitioners, clients, and others?
- Can it be made available free or at low cost?
- Is there a strong relationship between the outcome measure results and real-world performance that it was meant to represent and predict?
- Does it take into consideration multi-cultural contexts in everyday practice?



Identify the Problem: Interviews and Surveys



- Perceptions (Swinkels et al, 2011)
 - “I have sufficient knowledge to use measurement instruments”
 - “Using measurement instruments is too time consuming”
 - “My (supervisor/patients/colleagues) support the use of measurement instruments”
 - “I don’t know which one to use”
 - “There aren’t any instruments appropriate for my patients”
- Can include facilitators and barriers present at individual and organizational levels

Identify the Problem: Observations



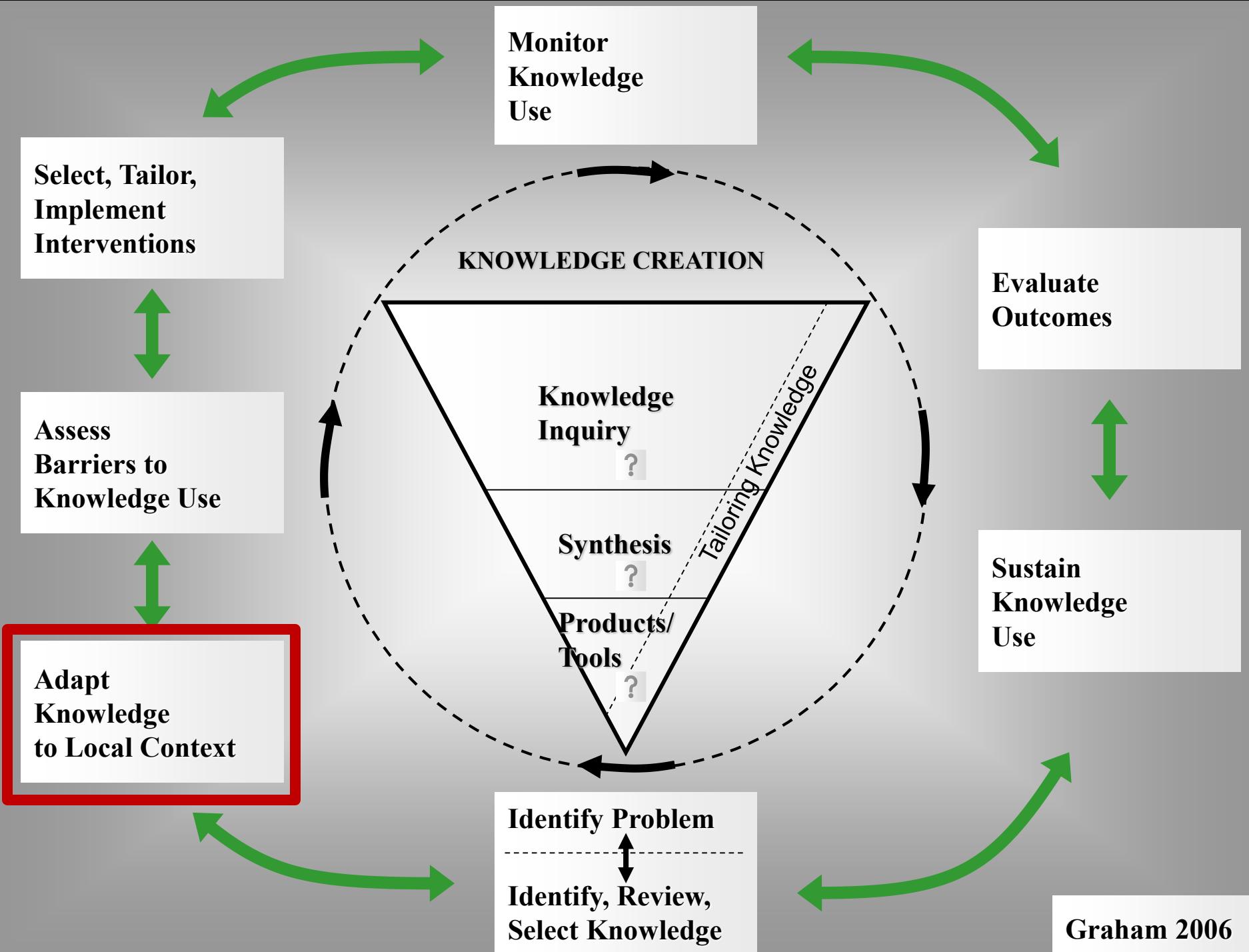
- What instruments are being used?
 - Consistent?
 - Measuring multiple times?
 - Incorporated into goals?
 - Reported in conference?
- Is everyone administering them the same way?
- How are therapists using the instrument to educate their patients?

Identify the Problem: Chart Audit



- Choose an appropriate & representative sample
- Determine criteria for audit:
 - How is progress monitored?
 - How are goals written?
 - What instruments are used regularly?
 - Are outcomes instruments appropriately incorporated into documentation (goals, linked to decision-making, etc)?
 - How often and when are the instruments utilized?
- Determine mechanism for feedback

http://patientsafetyed.duhs.duke.edu/module_b/module_overview.html



Adapt Knowledge to Local Context



- Protect integrity of evidence and recommendations, but package in a way that facilitates use
- Participation from stakeholders
- Review characteristics of study samples for similarities with your patients
- Transparent reporting of information to promote confidence
 - include limitations



Rehabilitation Measures Database

Title of Assessment	10 M
Link to instrument	10 L
Purpose	Assess
Description	

Minimally Clinically Important Difference (MCID)

Geriatr

- MCID: 0.1 m/s

Acute Stroke: (Tilson, 2010; n = 283; mean age = 63.5 (12.5) years; stroke onset < 45 days; gait speed < 0.18 m/s)

- MCID: 0.16 m/s

Cut-Off Scores

Stroke: Ambulation ability has been correlated with gait speed (Perry, 1995); changes in gait speed that results in changed classification are meaningful (Schmid, 2007); ambulation ability that is predicted by gait speed is a reliable method of classifying patients (Bowden, 2008)

- <.4 m/s were more likely to be household ambulators
- .4 -.8 m/s limited community ambulators
- >.8 m/s were community ambulators

Normative Data

Comfortable/Fast Gait Speed: (Bohannon, 1997; n = 230 healthy volunteers)

Comfortable/fast gait speed in meters/second for men by decade (Bohannon, 1997)

- 20s: 1.39 / 2.53
- 30s: 1.46 / 2.45
- 40s: 1.42 / 2.42

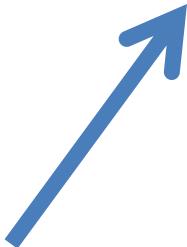




Rehabilitation Measures Database



Title of Assessment	10 Meter Walk Test
Link to instrument	10 Meter Walk Test
Purpose	Assesses walking speed in meters per second over a short duration
Description	<ul style="list-style-type: none">The individual walks without assistance 10 meters (32.8 feet) and the time is measured for the intermediate 6 meters (19.7 feet) to allow for acceleration and decelerationStart timing when the toes of the leading foot crosses the 2-meter markStop timing when the toes of the leading foot crosses the 8-meter markAssistive devices can be used but should be kept consistent and documented from test to testIf physical assistance is required to walk, this should not be performedTest can be performed at preferred walking speed or fastest speed possibleDocumentation should include the speed tested (preferred vs. fast)Collect three trials and calculate the average of the three trials

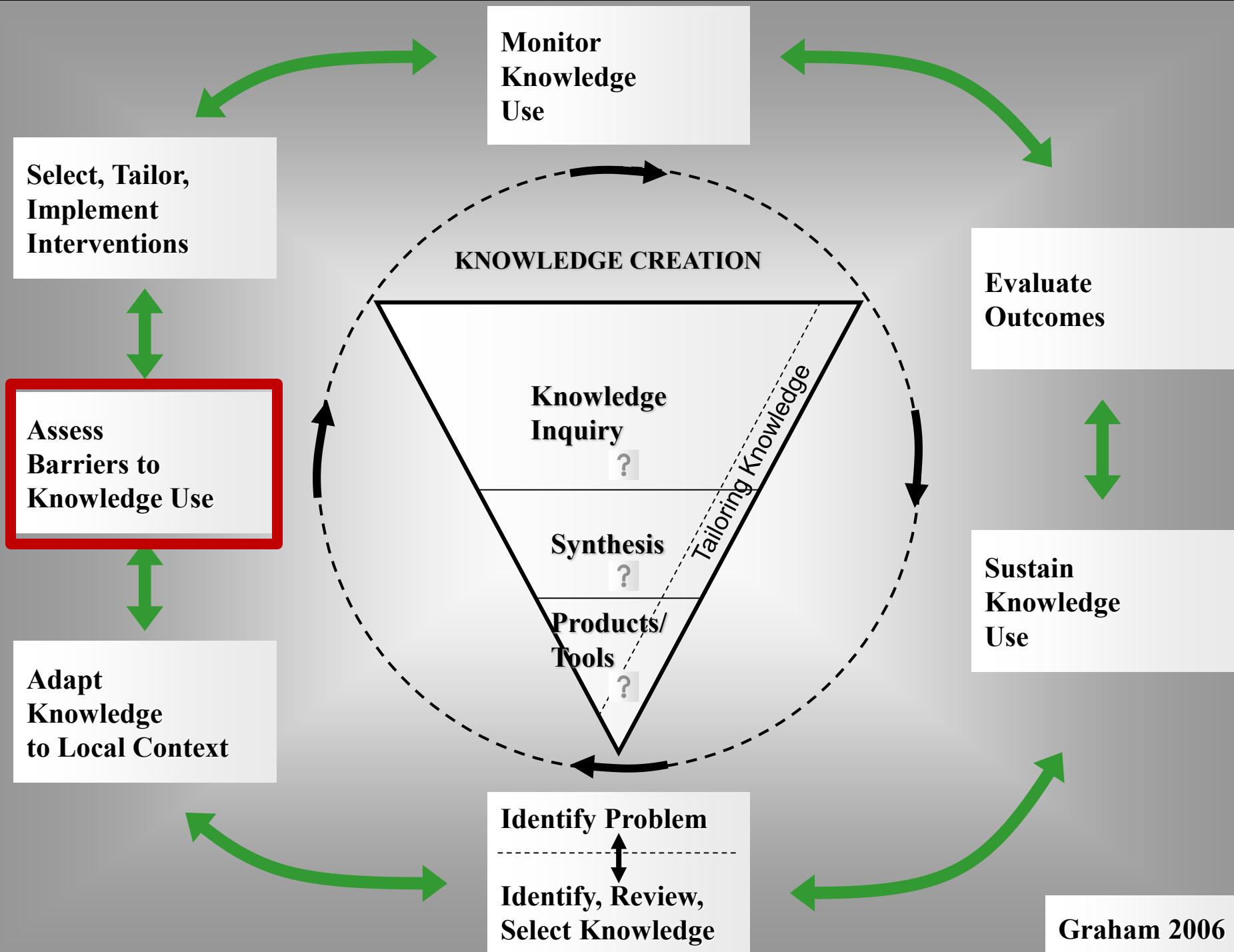


Add site specific information:

- Where is the equipment kept?
- Specific area “marked” for 10 meter walk
- When and how often will the measure be taken?
- Recommendations for using in goals
- Where and how is the instrument documented in the POC?
- How are the results transferred to the next level of care?

lays; gait speed < 0.18 m/s)

es in gait speed that results predicted by gait speed is a



Barrier Review



- Review the comments made throughout the workshop
- Additional Barriers

Common Barriers



- **Individual**
 - Time
 - Knowledge
 - Resources
 - Competency
 - Attitude

- **Organizational**
 - Time and Cost
 - Policy
 - Culture

(Swinkels 2011, Jette 2009, Finch 2002, Kay 2001)

Common Facilitators

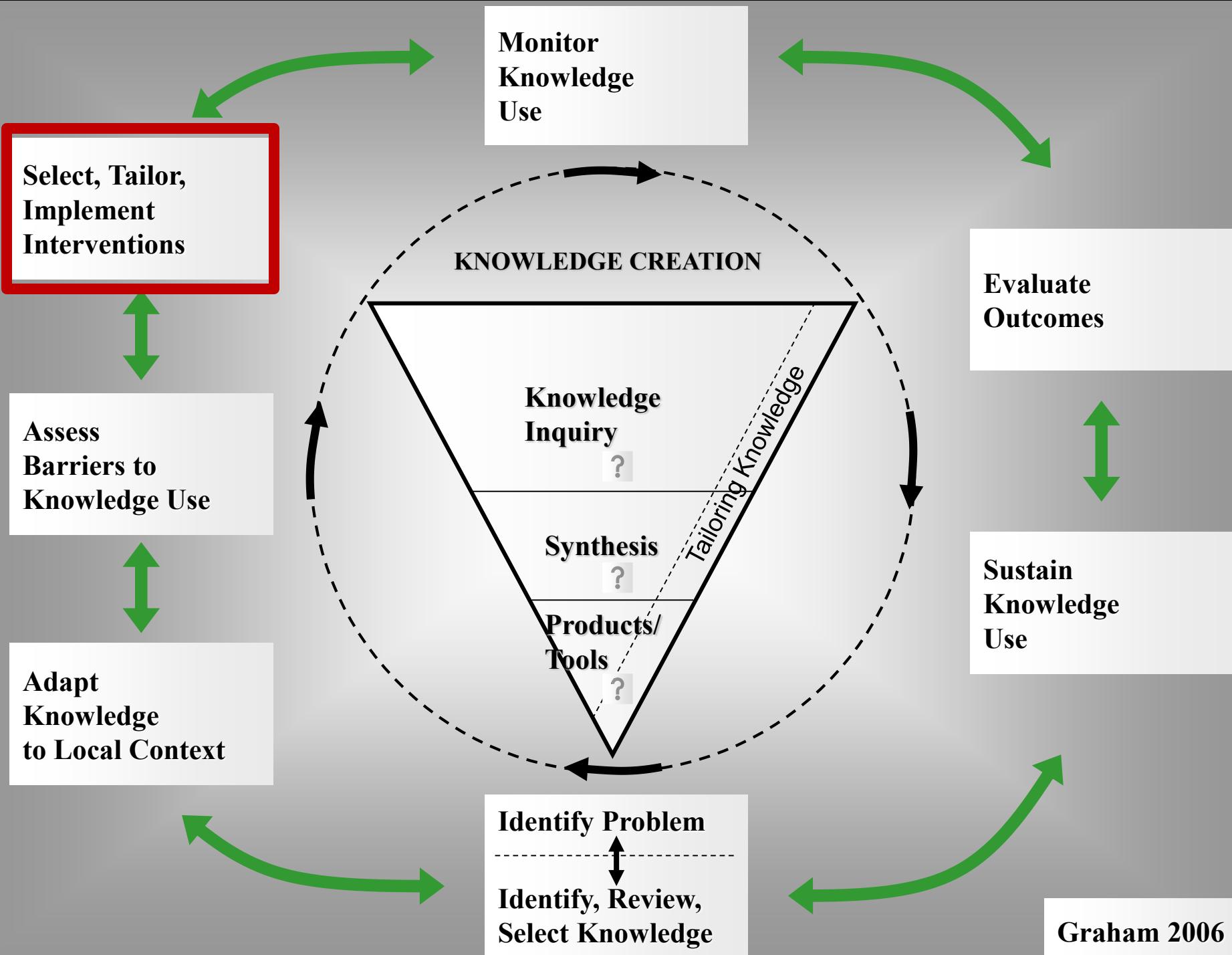


Individual

- Positive attitude
- Flexibility
- Practicality

External

- Access to resources: range of measures, guide to selection
 - Provide summaries of research written in an understandable manner (Bury, 1996)
 - Concisely summarized research (Jette et al, 2003)
 - Free online resources that are available at the point of care (Jette et al, 2003)
- Support: from colleagues (opinion leaders) and organization
- Guidance in selection, administration, scoring, and interpretation



Selecting Interventions



- Identify objectives for implementation
 - Facilitate improved patient outcomes
 - Assist in monitoring patient progress and determining presence of a plateau
 - Standardize care
 - Improve communication between levels of care, patients, and payers
- Select strategies that will assist in overcoming specific barriers
 - Lack of understanding: tailored education, mentoring, etc.
 - Lack of time: locate a file in clinic with copies of instrument with details of how to use/interpret them, explain value of measures
 - Lack of equipment: specific boxes with equipment, identify space in clinic, etc.
 - Forgetting when to administer: alter documentation to incorporate measurements, timing, etc

Solutions to Clinical Barriers



- Documentation
 - Keep test packets of all routine tests in the clinic
 - Recording results:
 - Paper: create a testing form that includes all tests performed regularly
 - Electronic: designate a specific place to record test results in the record.
 - Create “cheat sheets” with meaningful change scores
- Equipment
 - Designate specific areas for testing (can change tile color, designate wall markers to indicate specific distances)
 - Create testing kits for common instruments
- Time to administer
 - Create checklists for each patient to ensure all measures are taken
 - Determine when an assessment could be included during a treatment session

Implementing Interventions: Example Strategies



- Educational outreach visits: expert visits your site and provides education tailored to address your clinic's barriers
 - Involves survey of practitioners to determine barriers
 - Tailors intervention to address barriers
 - Education provided by a respected person

***Median 5.6% improvement in compliance reported in Cochrane Review (O'Brien et al, 2007)*

Implementing Interventions: Example Strategies



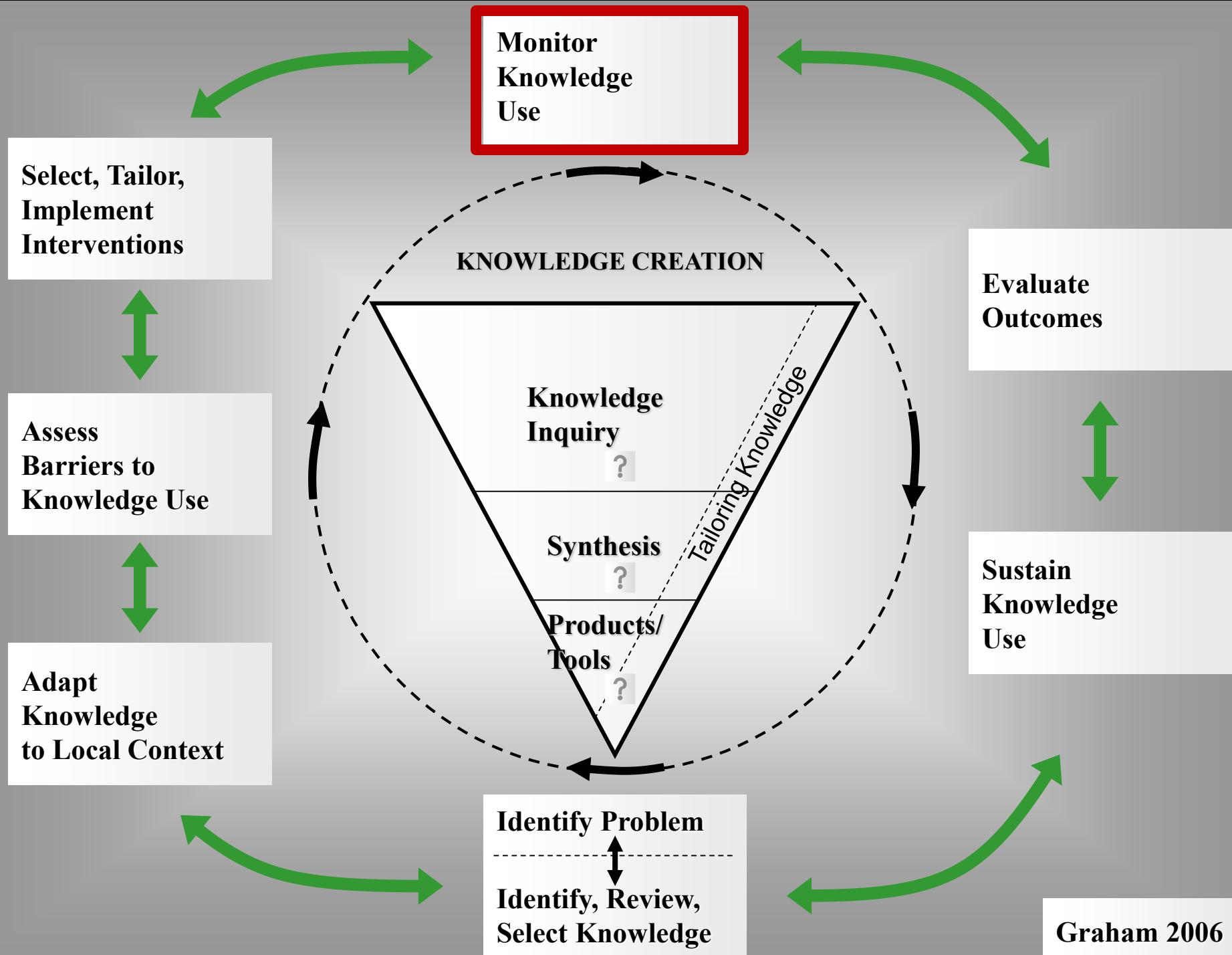
- Knowledge brokers: individuals who are able to bridge research and clinical worlds
 - Develops mutual understanding of goals and cultures
 - Skills in facilitating, problem-solving, research and communication
 - Understand the evidence and implementation of specific instruments
 - Ability to tailor implementation activities are adapted to meet the needs of colleagues (Rivard et al, 2010)
- In a large system of care, could use knowledge brokering intermediaries that are located at each site of care (local champion)

Implementing Interventions: Example Strategies



Evidence to support knowledge brokering

- Individuals stimulated a peer-to-peer learning culture (Cameron et al, 2011)
- Knowledge brokering activities included: (Rivard et al, 2010)
 - Self-learning
 - Teaching/presentations to large/small groups and individual PTs
 - Preparation of resource binders, educational materials, etc
 - Liaison with stakeholders
 - Networking with other knowledge brokers
- Model significantly increased the knowledge and use of pediatric measurement tools (Russel et al, 2010)

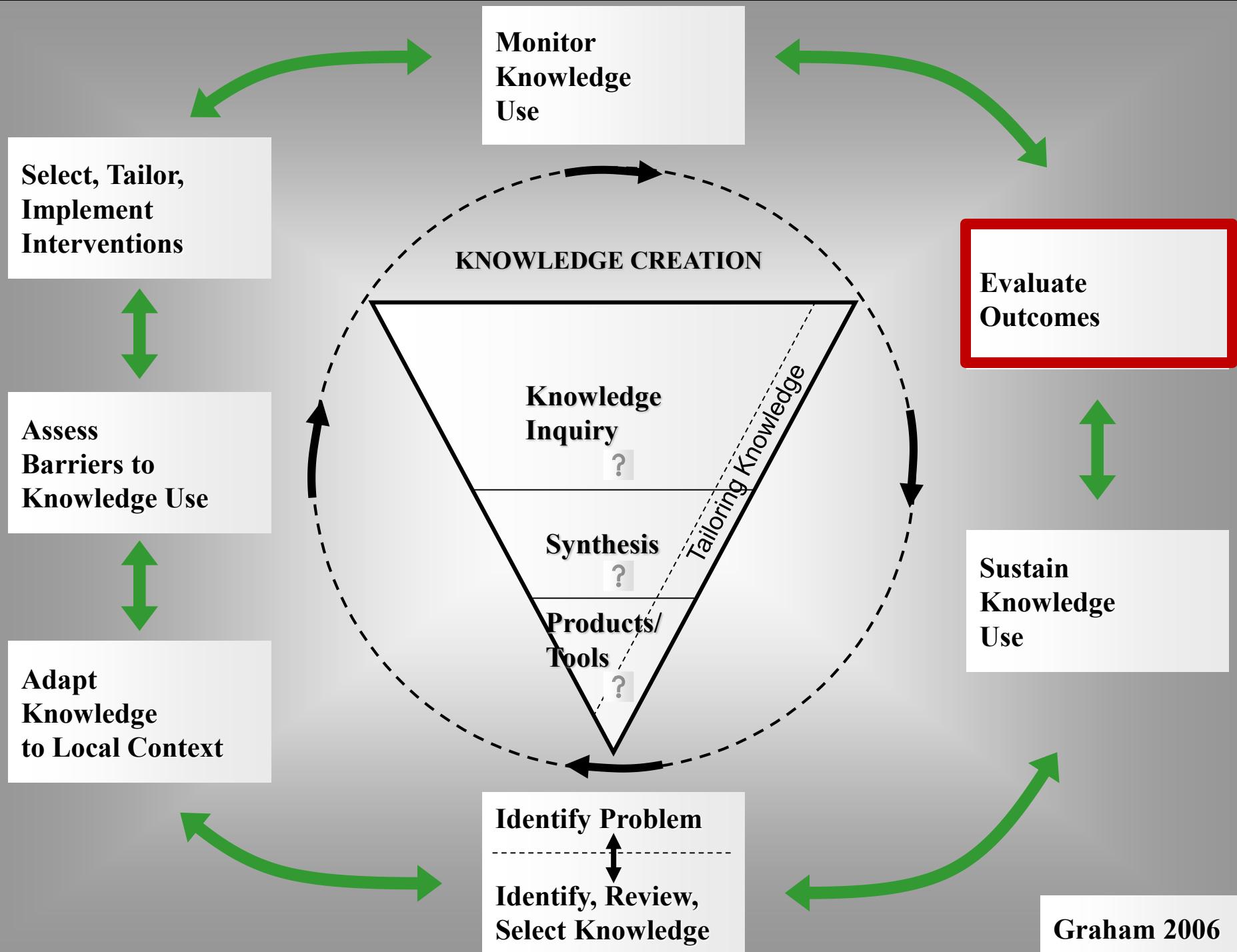


Graham 2006

Monitor Knowledge Use



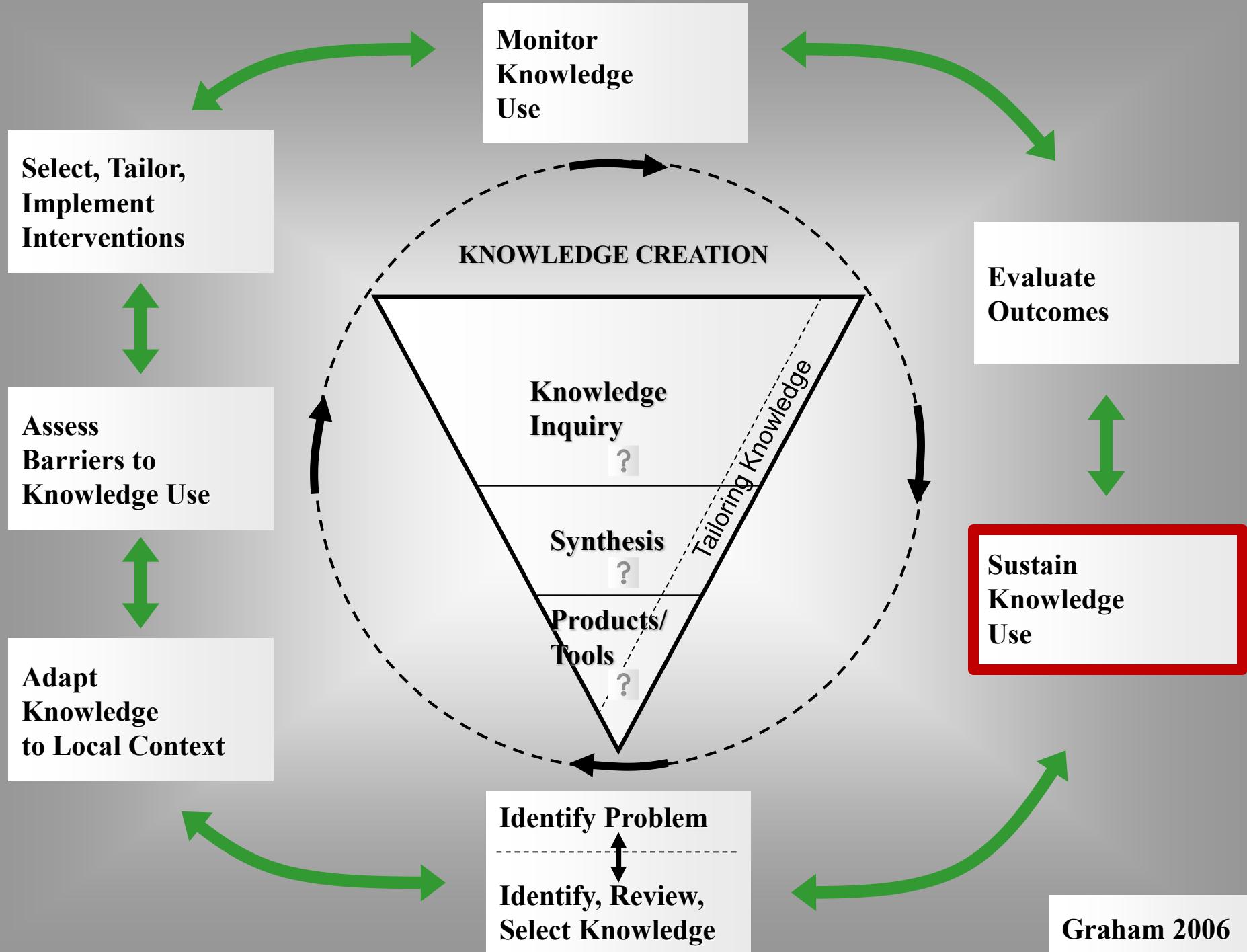
- Changes in knowledge levels, understanding, or attitudes
 - Interest in outcomes measures
 - Understanding of the evidence, application and interpretation
 - Positive attitude toward utilization
- Actual changes in behavior or practice
 - Utilization of standardized measures
 - Integrating results into decision-making and the plan of care
- Surveys, interviews, chart audits



Evaluate Outcomes at Various Levels



- Patient
 - Improvement in functional outcome
 - Length of stay
 - Satisfaction
- Clinician
 - Changes in decision-making
 - Efficiency
 - Satisfaction
- Organizational or process level
 - Overall patient outcomes
 - Reimbursement



Strategies Sustain Use: Clinicians



- Continue to make measurement relevant
 - Continue education on measurement
 - Ongoing journal clubs to discuss measurement topics
 - Annual competencies and standardization of instruments
 - Routinely report test scores in conferences, notes, etc
 - Provide a place in documentation for results
 - Integrate communication about test results between clinicians

Strategies Sustain Use: Administrators



- Leadership
 - Support ongoing OM “champions”
 - Identify individual accountable for continuing to update practice
- Financial supports
 - Include OM utilization as component of merit increases
 - Allow some “protected time” for learning new measures
 - Send staff to CEU courses related to measurement

Putting It All Together....



Change Agent

RIC Case Study Description

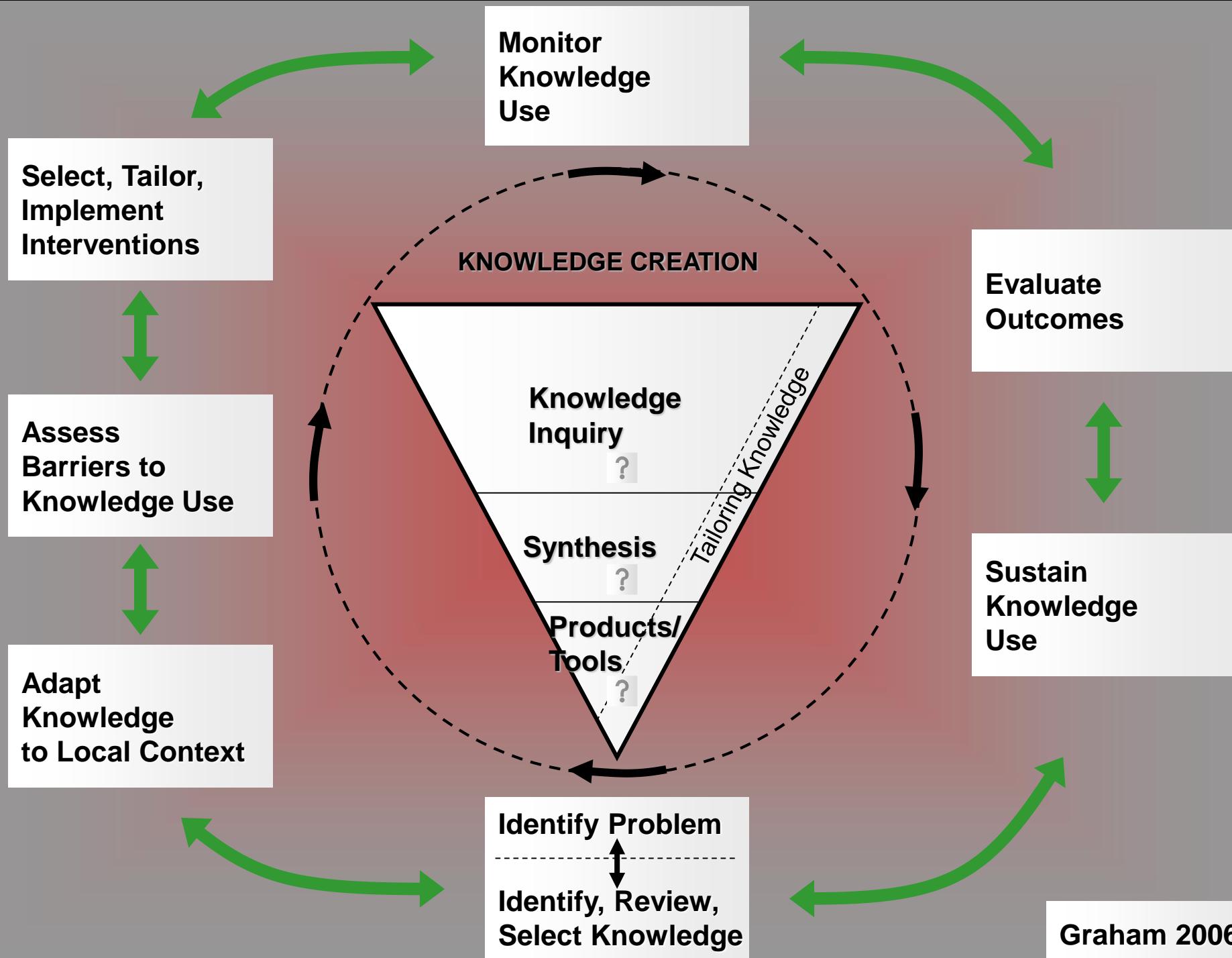


- Rehabilitation Institute of Chicago (RIC)
 - 192 inpatient rehabilitation beds
 - 30 additional day rehabilitation/outpatient sites
 - 3,000 inpatient / 17,000 outpatients served annually
- Allied Health Staffing
 - 134 PTs
 - 81 OTs
 - 43 SLPs
- 7 federal designations for research centers

RIC Case Study Funding



- Initial funding provided by the Henry B. Betts Innovation Award
 - Initiated by leadership to stimulate innovation and change
 - Provides time for focused development of project
 - Recognition from entire organization
 - Multiple projects funded, “winning project” receives bonus



Identify the Problem: Understanding Utilization of EBP



- Staff perceptions determined by a survey
 - **50% had difficulty determining impact of interventions on patient outcomes**
 - 50% indicated they don't know evidence for assessments
- Research investigations
 - **10% of patients were assessed with standardized measures (Moore et al, in review)**

**** Practice at RIC was consistent with the results of the literature – evidence-based assessments and interventions were not being used routinely in clinical practice*

Identify the problem	Adapt to local context	Barriers & Facilitators	Select & Implement Interventions	Monitor Knowledge Use	Evaluate Outcomes	Sustain Knowledge Use
----------------------	------------------------	-------------------------	----------------------------------	-----------------------	-------------------	-----------------------

Identify the problem: Understanding clinician barriers



Clinician-reported barriers to EBP:

- access to the literature (>72%)
- training to critique literature (>50%)
- time read/analyze literature (>90%)
- time to seek out evidence for each patient (82%)

Identify the problem	Adapt to local context	Barriers & Facilitators	Select & Implement Interventions	Monitor Knowledge Use	Evaluate Outcomes	Sustain Knowledge Use
----------------------	------------------------	-------------------------	----------------------------------	-----------------------	-------------------	-----------------------

Clinicians adapting research evidence



Battery of Rehabilitation Assessments and Interventions (BRAIN project)

- Clinicians developed 1-2 page summaries
 - Assessments
 - Psychometrics & clinical utility
 - Barriers & facilitators to use
 - Utilization of instrument in goal development
 - “Clinical bottom line” section
 - Interventions
 - Parameters/Dosage
 - Outcome measures
 - Strength of evidence
 - Documentation tips

Identify the Problem

Adapt to Local Context

Barriers & Facilitators

Select & Implement Interventions

Monitor Knowledge Use

Evaluate Outcomes

Clinicians adapting research evidence



- Staff clinicians, research clinicians & managers review and summarize literature (specialists)
 - Provide education and mentoring on critiquing research
 - Regular meetings to discuss evidence
 - Determine best practices at RIC
- Advisory board of physicians, researchers, administrators, new graduate and experienced clinicians
 - Provided input about summaries, format, access, procedures, and dissemination plan
 - Convened during development & will again during periods of change

Identify the Problem

Adapt to Local Context

Barriers & Facilitators

Select & Implement Interventions

Monitor Knowledge Use

Evaluate Outcomes

Title:	10 meter walk test (10 MWT)
Reviewed / Author:	Jennifer Moore PT, NCS / 11/19/08 Updated May, 2012
Key Points for Clinical Application	
Purpose	<ul style="list-style-type: none">The 10 Meter Walk Test (10 MWT) assesses short duration walking speed (m/sec). The 10 MWT assesses short distance capacity in ambulation and other measures are required to assess balance, physical assistance required and endurance.The scale properties (time in sec or m/sec) of the 10 MWT make it a responsive test well suited to evaluating clinical interventions.The psychometric properties listed below represent testing for 10 MWT as well as other short distance gait speed tests (4 meter walk, 15 meter walk).We recommend using the 10-meter walk test to determine gait speed.
Description/Administration	<p>Test Selection for Gait Speed:</p> <ol style="list-style-type: none">Begin collecting a 10 meter walk when a patient is able to walk 10 meters without physical assistance.IF THE PATIENT REQUIRES ASSISTANCE TO PERFORM THE TEST, THE ACTUAL 10 METER WALK TEST IS NOT RELIABLE OR VALID. IF YOU CHOOSE TO COLLECT THE MEASURE, DOCUMENT IT IN THE "TESTS THAT REQUIRE ASSISTANCE SECTION" IN THE PT STANDING BALANCE SECTION OF CERNER. <p>Test Administration:</p> <ul style="list-style-type: none">Measure the time (seconds) for an individual to walk 10 meters.<i>Should only be performed with patients who ambulate with CGA or better. If patient is unable to walk without physical assistance, please document in the "Measures Requiring Assistance" section in Cerner.</i>Performed using a "flying start", patient walks 10 meters (33 feet) and the time is measured for the intermediate 6 meters (20 feet).The stop watch should start when the leading FOOT crosses the 2 meter line and end when the leading foot crosses the 8 meter line.<u>Two trials should be collected at self-selected speed and two trials at fastest speed. These trials should be averaged.</u><ul style="list-style-type: none">Testing instructions should be:<ul style="list-style-type: none">Self-selected – "Please walk down this hallway at your normal comfortable pace when I say go."Fast-velocity – "Please walk down this hallway as fast as you safely can"

Title	High-Intensity Upper Extremity Practice
Author Reviewed	Molly Listenberger, OT 5.18.10
Key Points for Clinical Application	
Purpose/General Information	<ul style="list-style-type: none">Extended task-specific practice is shown to promote functional recovery after stroke due to neural adaptations in motor system networks⁴. Studies state differing amounts of repetitions hypothesized to create lasting change, but all suggest that hundreds of repetitions are necessary^{2,3}. Currently, individuals participating in stroke rehabilitation programs are not performing enough task-specific upper extremity repetitions to enhance neural-plastic changes⁵, which will ultimately lead to increased function.
Treatment Protocol	<ul style="list-style-type: none">Consists of supervised, massed practice of functional daily tasks, which are appropriately graded and progressed for each patient.
Matching Participant Goals with Specific Tasks	<ul style="list-style-type: none">Administer COPM<ul style="list-style-type: none">Encourage patients to select activities/tasks that include a primary UE componentSelect treatment activities based on COPM goalsIf patient cannot perform whole task, select a component of the task as the treatment activity
Grading Tasks: Physical position of the participant	<ul style="list-style-type: none">SittingStanding
Grading Tasks: Changing position of task materials	<ul style="list-style-type: none">Height of task materialsDepth, distance of reach (move task materials closer or further away)Place task materials midline/right/left of the patient
Grading Tasks: Changing the weight of task materials	<ul style="list-style-type: none">Heavy objectsLight-weight objects
Grading Tasks: Changing the size of objects	<ul style="list-style-type: none">Use large itemsUse small items (eg, small buttons vs large buttons)
Grading Tasks: Using adaptive equipment/materials	<ul style="list-style-type: none">Use dycem to prevent an item from movingAllow therapist to hold items in order to stabilize task materials

Clinicians adapting research evidence



BRAIN Pilot provided information about successful adaptation of research

- Results:
 - Decreased time to search for answer to clinical question
 - 3 minutes vs >15 minutes
 - 40% unable to answer question using traditional methods
 - Increased accuracy (100% vs.. 20%)
 - Improved staff perception of barriers
 - Improvement in access to evidence (100%)
 - Increase ability to interpret evidence (100%)
 - Decrease time to read, understand, apply evidence (89%)

RIC Case Study: Facilitators



- Individual facilitators:
 - > 90% feel that understanding evidence is essential
 - 73.5% want development opportunities
- Social context:
 - Vision of leadership to integrate research with clinical practice
 - Funding through the HBB Award
 - Development of role models through the BRAIN
- Organizational:
 - Researchers onsite, relationships with many Universities
 - All stakeholders involved through advisory board
- Economic & political:
 - Clinical ladder program supports academic efforts of clinicians
- Patients:
 - High expectations

Identify the problem	Adapt to local context	Barriers & Facilitators	Select & Implement Interventions	Monitor Knowledge Use	Evaluate Outcomes	Sustain Knowledge Use
----------------------	------------------------	-------------------------	----------------------------------	-----------------------	-------------------	-----------------------

RIC Case Study: Barriers



- Social context:
 - Traditional practice requiring cultural change
 - Opinion leaders
- Organizational:
 - Very large system of care
 - Each site has its own culture
- Economic & political:
 - Understanding charging, documentation, reimbursement policies, etc
- Patients:
 - Limited therapy time & understanding

Identify the problem	Adapt to local context	Barriers & Facilitators	Select & Implement Interventions	Monitor Knowledge Use	Evaluate Outcomes	Sustain Knowledge Use
----------------------	------------------------	-------------------------	----------------------------------	-----------------------	-------------------	-----------------------

Interventions: Dissemination through Champions



- Adopt to local context
- Barriers / facilitators

BRAIN
Specialists

- Address site specific barriers
- Onsite mentors

Inpatient (IP)
champions

Outpatient (OP)
champions

Day
rehabilitation
(DR) champions

All IP clinical
staff

All OP clinical
staff

All DR clinical
staff

Identify the
problem

Adapt to
local context

Barriers &
Facilitators

Select & Implement
Interventions

Monitor
Knowledge Use

Evaluate
Outcomes

Sustain
Knowledge Use

Intervention: Brain Champion Support



- Education, mentoring, ongoing support
 - Psychometrics and clinical utility
 - Standardization instructions
 - Tips for overcoming common barriers
 - Purchasing measuring wheel for 6 minute walk
 - Adding different color tiles to mark 10 meter walk test
 - Velcro ruler onto wall for functional reach
 - Developing “map” for 6 minute walk route
 - Creating a berg balance scale “kit”

Monitor Knowledge Use: Survey and Chart Audits



- Survey results (3 years post intervention)
 - Increased outcome measures (77%)
 - Increase evidence-based interventions (54%)
 - Use the BRAIN to:
 - Educate clinicians (58%)
 - Educate patients (54%)
- Chart audit underway
- Reports of potential overutilization of measurement?

Identify the problem	Adapt to local context	Barriers & Facilitators	Select & Implement Interventions	Monitor Knowledge Use	Evaluate Outcomes	Sustain Knowledge Use
----------------------	------------------------	-------------------------	----------------------------------	-----------------------	-------------------	-----------------------

Clinician Outcomes



- Clinician perspectives on the BRAIN impact:
 - More discussions about EBP with colleagues (72%)
 - Better understanding of clinical translation of research (65%)
 - Better understanding of research (53%)
 - Better understanding of statistics (42%)
- Chart audits underway to determine compliance
- Professional Development
 - 150 topics reviewed to date
 - 30 additional topics scheduled this year

Organization outcomes



- Social impact
 - Large amount of staff involvement
 - 58 – 70 Specialists annually
 - 47 - 52 Champions
 - 20 Advisory Board members
 - Increased interactions between clinicians & researchers
 - Cultural shift toward scientific thinking
- Standardized evidence-base practices
 - Standardization of 19 outcome measures to date
 - Standardization of 5 interventions to date

Identify the problem	Adapt to local context	Barriers & Facilitators	Select & Implement Interventions	Monitor Knowledge Use	Evaluate Outcomes	Sustain Knowledge Use
----------------------	------------------------	-------------------------	----------------------------------	-----------------------	-------------------	-----------------------

Sustainability plan



- Process changes
 - Standardized assessments and interventions added to new-hire orientation
 - Documentation changes requested by champions
 - Required measurement battery
 - Measurement results reported regularly at team conference
- Financial incentives
 - EBP in merit increases
 - BRAIN specialist and champion became core clinical ladder elective
 - Cost of BRAIN leaders supported by organization

Identify the problem	Adapt to local context	Barriers & Facilitators	Select & Implement Interventions	Monitor Knowledge Use	Evaluate Outcomes	Sustain Knowledge Use
----------------------	------------------------	-------------------------	----------------------------------	-----------------------	-------------------	-----------------------

Sustainability Plan



- Other plans currently being integrated
 - Re-standardization of selected topics
 - Regularly scheduled all-staff in-services on updates to standardized assessments and interventions
 - Encourage increased staff involvement in clinically based research
 - Regular chart audits with feedback

Identify the problem	Adapt to local context	Barriers & Facilitators	Select & Implement Interventions	Monitor Knowledge Use	Evaluate Outcomes	Sustain Knowledge Use
----------------------	------------------------	-------------------------	----------------------------------	-----------------------	-------------------	-----------------------

Lessons learned



- A good champion is critical to the success of this framework
 - Working to define practice style traits and characteristics of a champion
 - Increasing the accountability of the role
- Need to focus on limited number of topics to implement per year to build expertise of champions

Key Components



- Organizational support
 - HBB Award
 - Vision of RIC leadership
 - All stakeholders involved
 - Interaction between multiple people
 - Ongoing financial support
- Individual facilitators
 - Developed by clinicians/researchers for clinicians
 - Found value in it
 - Vested
 - Continuous clinician input
 - Development and recognition of clinician experts
- Piloted and refined project before system-wide roll-out

Case Study: Translation to an Individual Clinic



- Same steps apply
- Talk with the PTs and other stakeholders to determine
 - Perceptions of utilization of OMs
 - Barriers/Facilitators
- Brainstorm about ways to overcome common barriers

Case Study: Translation to an Individual Clinic



Utilize online resources to:

- Determine the best instruments based on:
 - your patient population
 - clinic's needs
 - clinical utility
 - psychometrics
- Create tailored resources
 - abbreviated forms of the most important information
 - tips for clinical application
 - suggestions to overcome common barriers (equipment to buy, ways to set-up the environment, etc)
 - ways to integrate measure into clinical-decision making in goal writing

Case Study: Translation to an Individual Clinic



- Once measures are chosen, assess barriers and facilitators to routine application at clinical and organizational level
 - Standardize the administration of the instrument
 - Education on the psychometrics, how to use in practice
 - Ensure clinicians have access to testing equipment & documents
- Monitor and measure success
- Determine how to sustain the program

Tips for the Individual Clinician



“Be the change you wish to see in the world” – Mahatma Gandhi

- Adapt information to be specific to your practice, assess barriers, develop a plan to overcome them, and TRY!
 - Utilize resources for support: Neurology section, Rehabilitation Measures Facebook page, colleagues at other facilities, etc.
- Make a case to your supervisors – use the evidence you have gathered
- Journal clubs and meetings to increase awareness of importance
- Store information in your clinic to support your practice
 - Binder or folder with copies of testing forms
 - Make “cheat sheets” with important clinical information on specific measures (MCIDs, Normative Values, Cut-off Scores)
 - Create testing forms for your test “battery”