ABSTRACT
This report consists of a critical review of the literature on treatments for memory impairments due to traumatic brain injury (TBI). The information from and questions raised by the current literature is presented in an annotated decision-tree, which illustrates critical decision-points, followed by treatment alternatives for memory impairments following TBI. Answers to the following questions were sought: 1) Which treatments provide the most effective and functionally-relevant outcomes for survivors exhibiting a range of cognitive abilities and concomitant conditions; and 2) How should research studies be focused and structured in order to maximize the clinical usefulness of findings?

BACKGROUND
• Memory impairment is a common and often debilitating consequence of TBI.
• Any degree of memory impairment can significantly exacerbate other cognitive problems or injuries and hinder learning/use of strategies to compensate for other deficits as a result of the injury.
• Clinicians use techniques such as errorless learning, spaced-retrieval training, and external memory aids to improve functional memory abilities.

METHOD
Articles were chosen for review in this study based on the following criteria:
1. Published in a peer-reviewed journal between 2001 and 2007
2. Evaluated treatment techniques for clients with memory impairments following TBI
3. Described treatment techniques in detail (as opposed to general terms such as “rehabilitation program”)

Articles were collected from the University of Texas at Austin Libraries and through electronic searches.

DECISION TREE
This figure is intended for the use of clinicians choosing treatments for clients with memory impairments due to TBI. The following are general guidelines: treatment should be always individualized to best meet a client’s needs. A stop sign indicates that another condition needs to be managed before proceeding with memory intervention.

GUIDELINES FOR FUTURE RESEARCH
Problems with the reviewed studies on memory interventions for clients with TBI include: inadequate description of participants, inadequate description of treatment techniques, small sample size, results insufficiently described, lack of data on generalization and implementation of learned information. Addressing these problems will increase the clinical utility of research findings. Specifically, articles should include answers to the following questions about intervention strategies:
• What behavior does this intervention target? (i.e. remembering factual information or remembering a compensatory strategy)
• What theory/research underlies the treatment?
• Where is the best place to provide intervention? (i.e. via the phone, in the client’s home, etc.)
• How long do treatment sessions last?
• How frequent are the treatment sessions?
• What type of cueing hierarchy is used?
• How much is the family involved in the intervention?
• Is the treatment adaptable to an individual’s changing cognitive skills? How?
• What materials are required? (include thorough description of external aids)

CONCLUSION
While many studies demonstrated positive outcomes for memory interventions such as external memory aids and errorless learning, few reported how the treatment affects the person’s daily life. Moreover, participant characteristics varied widely across studies, making it difficult to determine which treatments are appropriate for individual survivors. The literature review revealed that the development of a clear-cut, evidence-based decision model would of necessity be fraught with ambiguities, due to many unanswered questions about participant variables and generalizability of the results. To make research more useful to clinicians, researchers should thoroughly describe participants and treatment techniques, use an adequate sample size to generalize findings and include data about generalization and maintenance of learned information.

REFERENCES