

Simulation-Based Training Manual for Internal Medicine Residents

Department of Medicine

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Introduction

- **Pre-80 hour work restrictions**
 - Learn by doing
 - Saw more, worked more, taught more
- **Post-80 hour work restrictions**
 - Less time with staff
 - Decreased clinical exposure time
 - EMR/computers, paperwork = less time to spend with patients
- **Safety and quality measures have made us question the old methods of learning.**
- **Growth of innovative and time-effective alternatives in education.**
- **Numerous studies have shown simulation to be an effective and often superior method of learning.**

Introduction

- **Today, most large medical training centers have medical simulation facilities.**
- **Medical simulators include a variety of devices from task trainers to full body high fidelity mannequins.**
- **Studies have shown that simulator trained physicians outperform non-simulator trained counterparts.**
- **Better, faster, stronger...and safer.**
 - **Complete procedures faster with fewer complications**
 - **Greater confidence in dealing with the ‘deteriorating’ patient**

Simulation in IM Clerkships/Residencies

- **No standardized goals and objectives**
- **Few resources and guides**
- **Little research on SIM use in IM scenario-based education**
 - **Clear benefits in ACLS, procedural skills, and physical exam proficiency**
 - **Common inpatient scenarios remains as yet largely undefined**

Simulation use at MCA

- **Chief Medicine Residents (CMR) at Mayo Clinic Arizona (MCA) started to incorporate simulation-based teaching sessions into AM report.**
- **Since 2011 the repertoire of scenarios has been passed down from CMR to CMR.**
- **We compiled a series of 20 scenarios with variable learning objectives and levels of complexity.**

Simulation use in MCA IM Residency

- Most scenarios involve clinically deteriorating patients that would typically be managed by hospital internists.**
- Each scenario follows a standardized format.**
- Expectations for resident performance are outlined in the “critical action list” that lends itself to effectively monitor and document trainees’ progress.**

MCA Internal Medicine Residency

Simulation Manual Contents

- **Introduction**
 - **Debriefing Tips**
 - **Mannequin Capabilities**
 - **Acknowledgements**
 - **20 Scenarios**
- **Outline of Scenarios**
 - **Learning Objectives**
 - **Setting**
 - **Truncated H&P**
 - **Scenario**
 - **Simulator Settings**
 - **Personnel**
 - **Lab & Diagnostic data**
 - **Critical action list / Treatment and Interventions**
 - **Branch points/Simulator Responses to Interventions**

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Simulation Manual - Scenarios

- **ACS – NSTEMI**
- **Acute Abdomen**
- **Acute Aortic Syndrome**
- **Acute Hypoxic Resp. Failure**
- **Acute PE**
- **Bilateral Severe PE**
- **AFib with RVR**
- **Anaphylaxis**
- **DKA**
- **GIB from PUD**
- **Hypercapneic Resp. Failure**
- **Hypernatremia**
- **Hypertensive Emergency**
- **Hyponatremia**
- **Opioid Overdose**
- **Seizure**
- **Sepsis – Pyelonephritis**
- **Sepsis – Sacral Decub**
- **Transfusion Reaction (TRALI)**
- **Variceal Bleed**

Simulation in Internal Medicine

Education Goals

- **Medical Knowledge & Critical Thinking**
- **Communication & Cognitive skills**
- **Confidence**
- **Teamwork**
- **Procedural skills**
- **Duty hours dilemma: “hands-on” void**
- **Patient safety: “practice” on mannequins**
- **Evaluation & Remediation**

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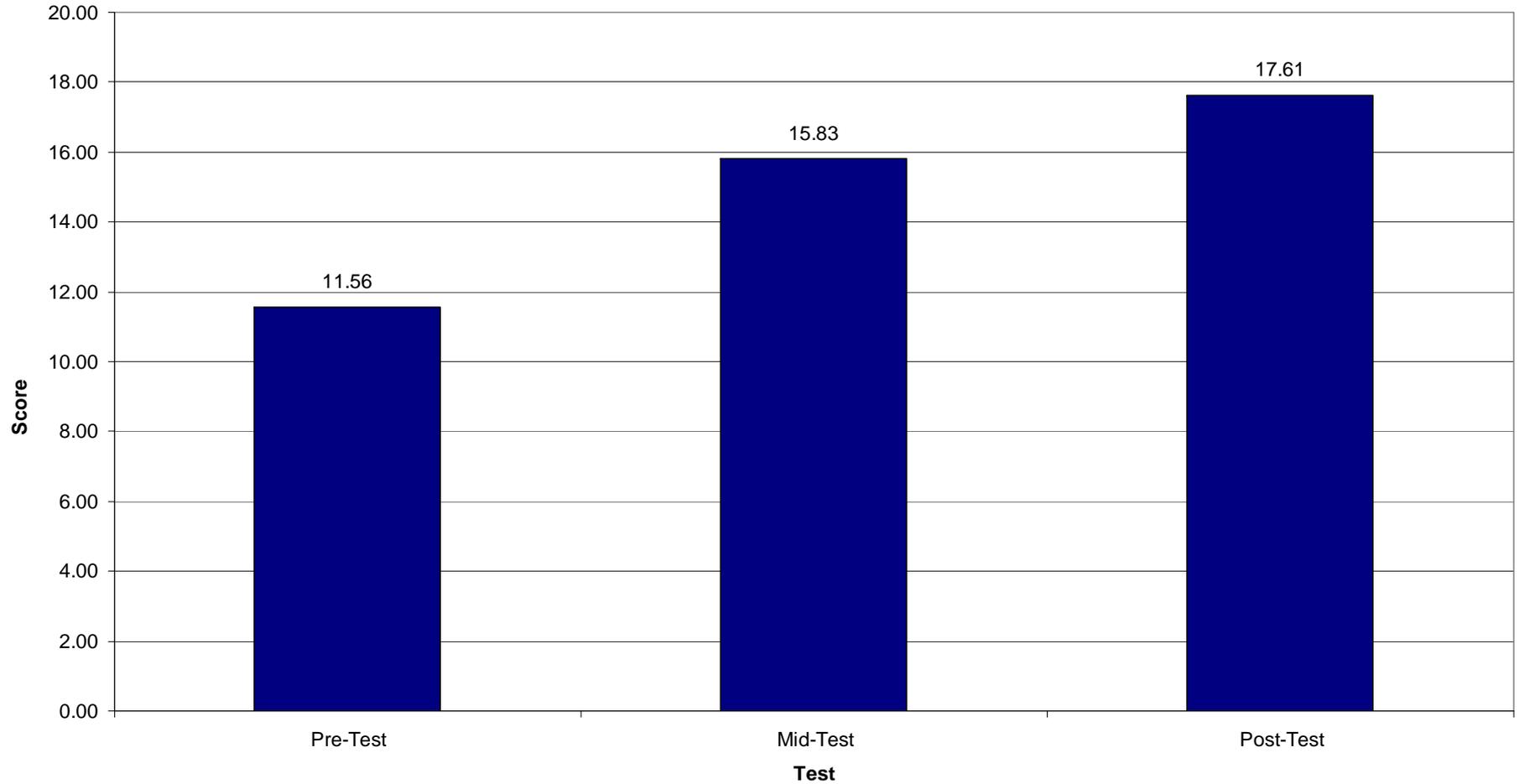
Simulation Manual Goals

- **Create a user friendly resource for Mayo Chiefs, Residents, and Consultants.**
- **Promote use of “standardized” scenarios for resident training & evaluation.**
- **Use as research tool for evaluating current and developing future SIM education programs.**

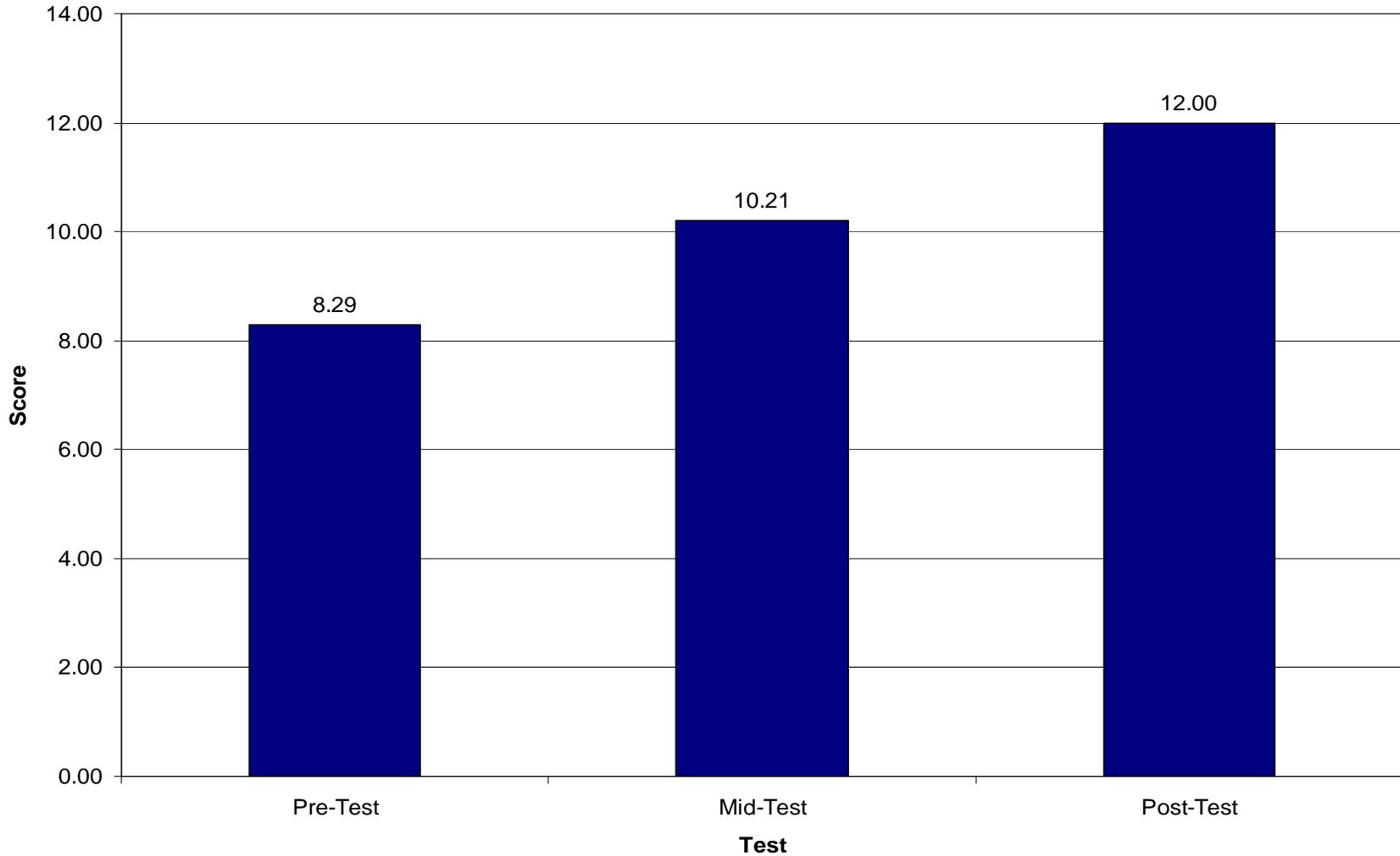
It works...

- **Vucicevic and Webb et al.**
 - **Evaluated the effect on acquisition of clinical knowledge and confidence in internal medicine residents**
 - **Simulation-based instruction was added to conventional didactic teaching**
 - **2 clinical topics: status epilepticus (SE) and atrial fibrillation with RVR (AF)**
 - **Core principles were taught in traditional classroom didactic lecture.**
 - **Lecture was standardized and performed by a content expert.**
 - **Simulation scenarios were designed and participants were expected to apply core principles in the acute management of SE and AF.**
 - **Survey on knowledge assessment of core principles and confidence given**
 - **Prior to didactic**
 - **After didactic (few days), but before simulation**
 - **After simulation (simulation was performed 1 week after didactics)**

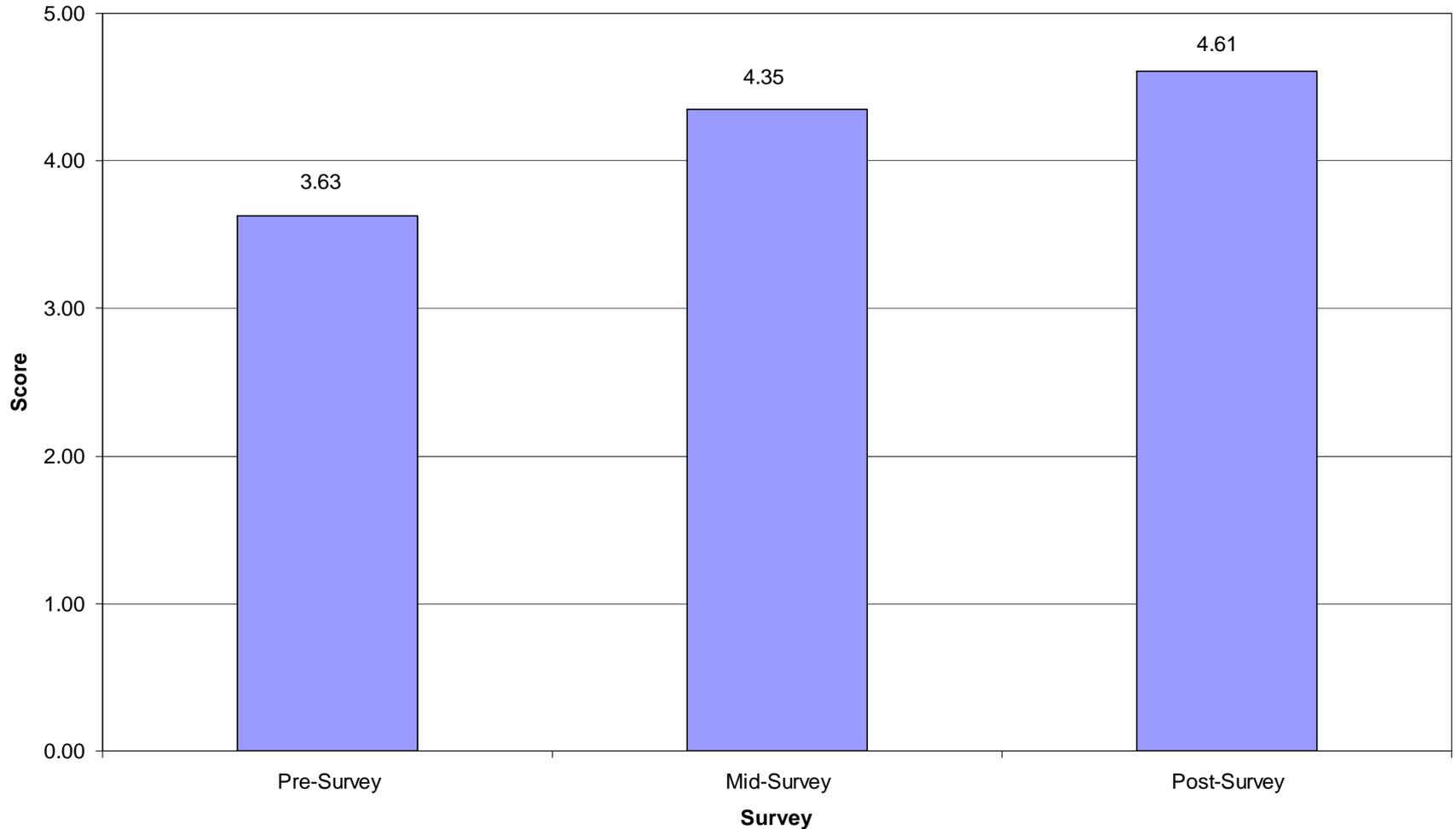
Atrial fibrillation – medical knowledge



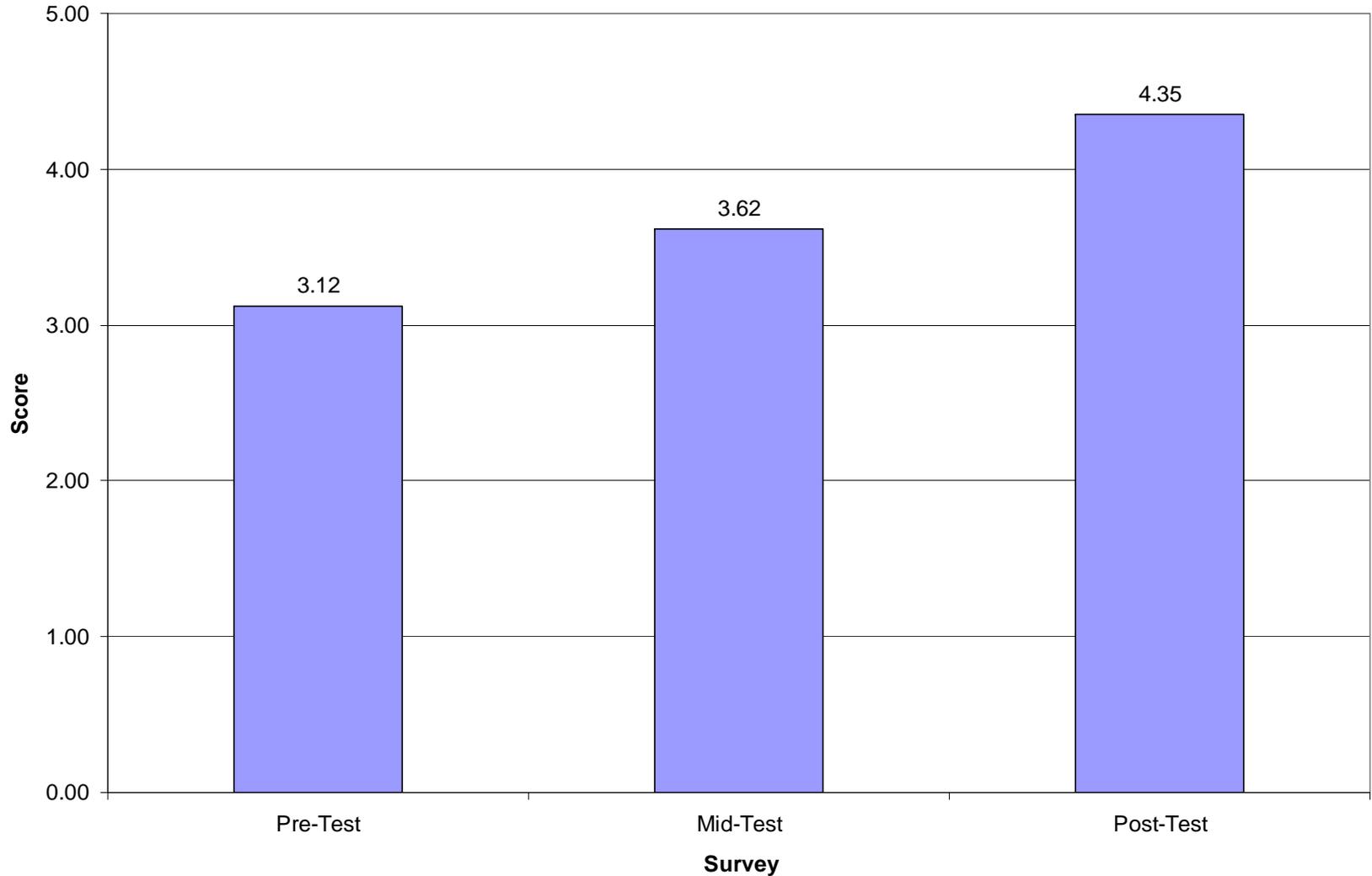
Status epilepticus – medical knowledge



Atrial fibrillation – confidence



Status epilepticus – confidence



Conclusion

- **Work hour restrictions, as well as safety and quality measures have impacted traditional hands-on training for IM residents.**
- **Simulation-based technology is an effective adjunct to a conventional didactic-based approach to teaching IM residents how to manage common inpatient conditions.**
- **MCA CMR use medical simulation training sessions to augment traditional didactic morning reports and to provide simulated hands-on experience of managing clinically deteriorating patients.**
- **A study performed at MCA demonstrates the effectiveness of simulation technology in improving medical knowledge and clinical confidence in managing commonly-encountered inpatient conditions when combined with traditional didactic teaching.**
- **Our compilation of these scenarios is now in press, for publication in both print and electronic versions, with plans for distribution and use as an educational and research tool.**

Thank you

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IM SIMULATION MANUAL

