Post Intensive Care Rehabilitation

Essay

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List of Abbreviations

ARDS	Acute Respiratory Distress Syndrome
CAM-ICU	Confusion Assessment Method For The Intensive Care Unit
CHF	Congestive Heart Failure
CPX	Cardio Pulmonary Exercise Testing
CR	Cardiac Rehabilitation
CVD	Cardio-Vascular Disease
EF	Executive Functioning

LIST OF ABBREVIATIONS

fMRI	Functional Magnetic Resonance Imaging
HREEG	High Resolution Electroencephalography
ICDSC	Intensive Care Delirium Screening Checklist
ICU-AW	ICU-Acquired Weakness
MEG	Magnetoencephalography
MMT	Manual Muscle Testing
MRS	Magnetic Resonance Spectroscopy
NIRS	Near-Infrared Spectroscopy
NIV	Non Invasive Ventilation
NMES	Neuromuscular Electrical Stimulation

LIST OF ABBREVIATIONS

PET	Positron Emission Tomography
PICS	Post Intensive Care Syndrome
PT	Physical Therapist
PTSD	Posttraumatic Stress Disorder
RPE	Rated Perceived Exertion Scale
SPECT	Single Photon Emission Computerized Tomography
TCD	Transcranial Doppler
TES, TMS	Transcranial Electrical And Magnetic Stimulation

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Introduction

Millions of individuals survive bouts of acute respiratory distress syndrome(ARDS), severe sepsis, and other forms of critical illness annually, only to develop significant, and long lasting cognitive impairment, physical and functional debility.(**Iwashyna *et al*., 2010**)

Cognitive impairment affects as many as 2 out of 3 intensive care unit (ICU) survivors, and is often persistent, especially following ARDS and sepsis. (**Jackson *et al*., 2003)**

Unfortunately, the cognitive and physical impairments encountered following critical illness, are often not formally recognized, and infrequently treated. With the exception of patients with overt cardiac disease (e.g., heart surgery), or frank brain injury (e.g., traumatic brain injury or stroke), only a small percentage of ICU survivors receive formal rehabilitation once they leave the hospital. In the few circumstances in which ICU survivors do receive rehabilitation, it typically occurs in normal rehabilitation contexts, and is not designed to meet the specific combination of cognitive, psychological, physical, and

functional problems experienced by many ICU survivors. (**Jackson *et al*., 2012**).

Early mobility and in-hospital rehabilitation appears promising in available reports. However, very few data exist to inform us regarding formal rehabilitation programs for general medical, and surgical ICU survivors, once discharged from the hospital, and no studies have attempted cognitive rehabilitation either alone, or in conjunction with the rehabilitation of other domains of function.

In the absence of active recovery programs, patients often fail to recover optimally and may experience accelerated decline with far reaching effects for them, their families, and public health at large. (**Elliott *et al*., 2011**)

AIM OF THE WORK

The aim of this assay is to focus on the importance, and the effectiveness of physical, as well as, psychological rehabilitation initiated after ICU discharge, for functional exercise capacity, and health-related quality of life in adult ICU survivors.

Post-Intensive Care sequelae

Millions of patients develop critical conditions that require ICU admission each year. ICU survivors, particularly those who require prolonged mechanical ventilation, experience high mortality. Compromises in physical, psychological, and/or cognitive function are common. Both patients and family caregivers are at risk for symptoms of anxiety, depression, posttraumatic stress disorder (PTSD), and sleep disorders (**Davidson *et al.*, 2012**).

Post Intensive Care Syndrome (PICS) is a condition defined as "new or worsening impairment in physical, cognitive, or mental health status arising after critical illness and persisting beyond discharge from the acute care setting." Both patients and family caregivers may be affected, a consequence termed PICS patient or PICS-F for family member **(Needham *et al*., 2012).**

Symptoms are lasting for months to years after ICU discharge. The following is a summary of findings from selected studies that illustrate the scope of the problem: **(Harvey, 2012)**

- 85%-95% of patients with ICU-acquired weakness have symptoms that last for 2-5 years or longer.

74% of ICU survivors diagnosed with acute respiratory distress syndrome have cognitive impairment at ICU discharge and 25% 6 years after ICU discharge.

10%-50% of ICU survivors experience symptoms of depression, anxiety, PTSD, and sleep disturbance, which may persist for years.

50% of ICU survivors require caregiver assistance 1 year later.

33% of family caregivers have symptoms of depression and 70% have symptoms of anxiety.

33% of family members have symptoms of PTSD, which can persist for 4 years or longer. (**Gautam *et al.*, 2017**)