Prescription iPods - Design and Implementation of a Computerized Clinical Prescription Music Medicine Model for Clinicians and Caregivers

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PROJECT

The power of music has been shown to work remarkably well in managing symptoms in Alzheimer's and dementia populations. Positive, astonishing results are consistently shown and are undeniable in this cohort. This computerized clinical model seeks to begin and implement a computerized, intake/ output prescription music programming that provides individualized prescriptive medical music programming designed to thwart dysfunctional mood and behaviors as seen during specific afternoon "Sundowning" hours in Alzheimer's (AD) and dementia patients.

The nurse, clinician or caregiver will provide the dementia patient's afternoon schedule of activities (resting, bathing, dressing, cognitive activity, etc.) after inputting the patient's clinical demographics (including psychological profile, clinical baseline demographics, co-morbidities, etc). An internal algorithm will then access proven musical interventions and provide a suggested music playlist to serve as a behavioral and cognitive escort throughout these challenging afternoon hours.

BACKGROUND

During the hours between 2:30-5:30 pm, Alzheimer's patients often display disturbing behaviors such as agitation, aggression, disorientation, confusion, combativeness, wandering and disruptive vocalizations. Such behaviors challenge the quality of life for both patient and caregiver. Music has been consistently shown to greatly minimize and reliably eliminate such behaviors while redirecting patient into improved mood, focused cognition and positive, functional behavior outcomes.

My work as a graduate student here at the Johns Hopkins Bloomberg School of Public Health, Dept of Mental Health, in conjunction with advisor Nancy Hodgson, PhD, RN and Director of the Center for Innovative Care in Aging, involves the understanding of targeted physiological responses to musical input which result in positive, healthy changes to autonomic nervous system mechanisms such as heart rate, blood pressure, oxygen saturation and cortisol as well as dopamine, immunoglobin A and melatonin levels. These markers prove to be reliable physiologic responses to music that reflect in drastically improved mood, behavior and cognition. Nurses and caregivers, however, are not trained or aware of how, or when to administer medical music interventions, nor understand what music appropriately shifts dysfunctional to preferred behavioral states.

The creation of this interactive computerized clinical program will take a 1-3-hour period of time in the day of an Alzheimer's patient and produce a musical intervention output designed to thwart issues that usually arise during regularly scheduled ADLs (or activities of daily living) in patients. For instance, during aggressive behaviors heart rate, blood pressure and cortisol levels rise in elderly patients. Slow music tempo (rhythm which maintains slower heart rate and exercises healthy heart rate variability) combines with a long, overarching melody (redirecting and slowing confused thought patterns) and shown to significantly reduce aggression and confusion in Alzheimer's. By managing

physiological responses, music will thwart the physiological platform whereby aggression and confusion occurs. Such strategies also apply to anxiety, cooperativeness, vocal outbursts and other issues. For example, if the patient's bathing schedule begins at 4pm, the medical music intervention begins at 3:55 or 3:58 and ushers positive cooperation in patients who will likely participate in the activity without resistance, aggression or negative attitude. This cooperation and improved attitude is directly due to the music intervention.

BUDGET AND MODEL

Expenses for this project will go mainly towards the computer programmer (projected $1000) who will design the intake and output aspects of the Prescription iPod music model. Consulting fees (projected $500) will be needed to thoroughly and accurately design the patient intake information consisting of demographics (basic psychological profile, satisfaction with life rating, MMSE, general mood inclinations, apathy/depression level, etc.), clinical baselines (baseline blood pressure and heart rate, GSR, sleep quality, etc.), co-morbidities (heart murmur, CPD, diabetes, etc), polypharmacologic considerations (side effects that may interfere with targeted responses) and music/ cultural preferences (jazz, classical, country, ethnicity, etc.).

The nurse, clinician or caregiver will then provide a proposed 1 to 3-hour afternoon schedule in 5 to 10-minute increments (i.e. 15 minute toiletry, 20 minute napping, 15 minute cognitive activity, 20 minute dressing, 5 minute conversation with caregiver, etc.) The computerized program will use all intake parameters to produce the 1-3 hour prescription music program, using an algorithm and pre-established archive of medical music selections and provide caregiver with a CD or computerized playlist for a patient's afternoon cognitive escort. This playlist may also be turned into a Youtube playlist with select, accompanying visuals.

Implementation of this model will serve as genesis for other models that will treat numerous neuropathologies and behavioral disorders including Parkinson's (music triggers better movement and range of motion), ADHD (music calms children's hyper-motorization and lack of cognitive focus). I am a master and pioneer in the field of prescription medical music programming and work from a respected career history as a professional and world-class musician. I recently earned a Masters in Cognitive and Behavioral Neuroscience at George Mason University before I continued my work here (MHS, Certificate in Gerontology) at the Johns Hopkins Bloomberg School of Public Health. Thank you for consideration of my project.

Linda Maguire

Project Budget

Computer programmer	**$ 800**
$15-30 per hour - for initiation and follow-through of clinical intervention model as described in abstract (low hourly fee with agreement for reasonable percentage of profit as incentive if the model is commercially viable)	
Psychology/ Clinical / Programming consultants	**$ 600**
$30-40 per hour to advise on measures needed to ensure adequate clinical parameters that will serve as basis for music output	
Miscellaneous	**$ 100**
Unforeseen expenses that are involved with such an undertaking (Blank CDs for output testing, flashdrives, etc.)	