


A Proposed Model For Identifying Practices: A Content Analysis of the First 4 Years of *Music and Medicine*

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Abstract

A model of the practices that emerge from the interface of music and medicine is presented. Categories include the treatment of medical problems of musicians, music in medical and health education, music for medical patients and staff, and foundational research. Subcategories of these practices are also discussed. These practices are illustrated through a content analysis of the articles published in the first 4 years of *Music and Medicine*.

Keywords

music, medicine, music therapy, music medicine, medical humanities

The purpose of this brief article is to present a model of the various practices that emerge from the interface of the extensive fields of music and medicine. When compared to earlier classification systems¹⁻³ in 1991, 1992, and 1999, the current model comprises additional practices and research areas. In previous models, only 3 categories of this interface were identified, but these categories vary. In 1991, these categories included medical music therapy, performing arts (music) medicine, and functional music.^{1(p1)} In 1992, the categories were traditional music therapy, music performance medicine, and medical music therapy^{2(p19)}; and in 1999, the categories included music therapy, music medicine, and performing arts medicine. Thus, it is reasonable to state that terminology has continued to change and the field has grown substantially within the last 10+ years. In fact, the research literature and the number, range, and diversity of practices require a more comprehensive framework from which the numerous possibilities emerging from the music and medicine interface can be viewed.

The model presented here is one that continues to evolve. The categories of practice that are included are delineated according to the following criteria (not all of which are relevant for every category): (1) the person or group involved in conducting the practice; (2) the intent of the practice; (3) the recipients; (4) the needs of recipients; (5) the medium (medicine and/or music); (6) the setting; and (7) the intended outcome.

It is important to note several points regarding this model. Although the model represents an attempt to categorize common practices related to music and medicine, it may be that some salient practices have been omitted. Some practices have been deliberately omitted, such as the area of self-help uses of music and the applications of technology to enhance health (the diverse practices in this area warrant a separate article). Also, the practices described here are not always discrete, and there

are overlaps between categories. Furthermore, the terminology that the author uses is not necessarily acknowledged or used universally. There may well be other terms available and used for the same practices. Not all possible terms for every practice are mentioned.

The categories of practice resulting from the interface of the broad fields of music and medicine are shown in Figure 1. These represent treatment/therapy practices as well as those that involve education and research. The order in which the categories are presented does not imply a hierarchy or suggest that any one practice is more important than another. Also, subcategories exist to further describe certain practices.

As a way of showing its potential utility as well as providing practical examples in each category, all articles in previous issues of *Music and Medicine* from 2009 through 2012 were reviewed and categorized according to the proposed model and are presented below. Excluded from categorization were general or historical articles, conference reports, descriptions of practice in specific countries, and guidelines. In addition, several articles were outside the boundaries of the current model, for example, noise in hospitals, and several articles could not be classified. After eliminating these articles, a total of 83 articles were reviewed and categorized.

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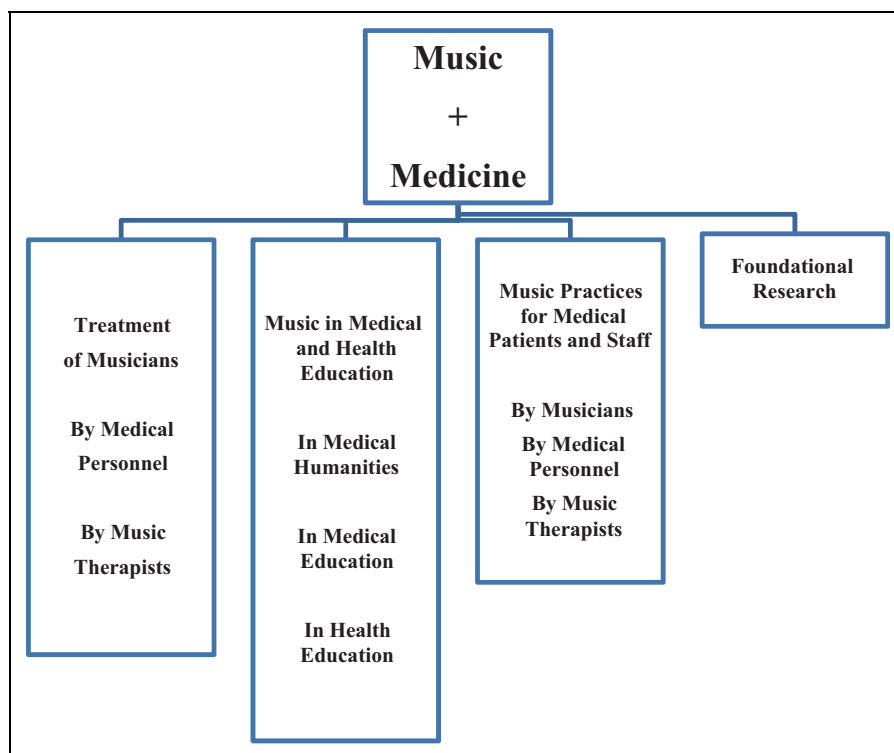


Figure 1. The practices resulting from the interface of music and medicine.

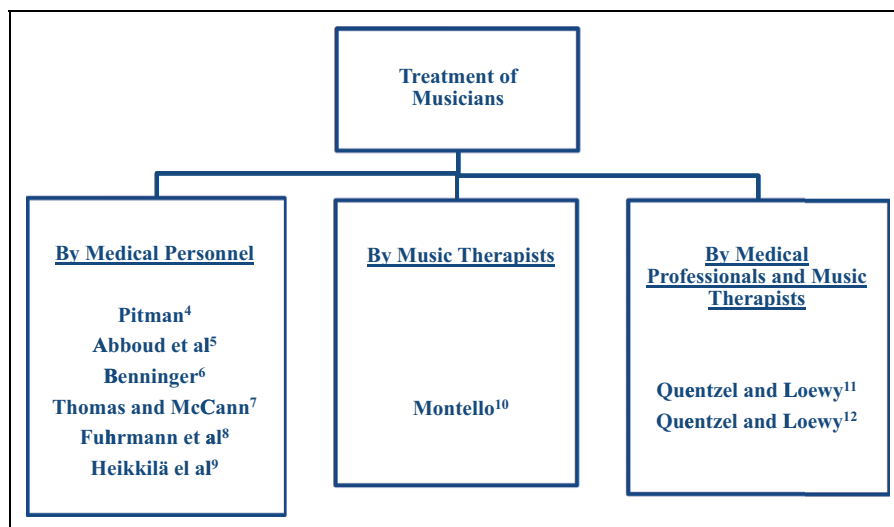


Figure 2. Categories of treatment of musicians with corresponding articles from *Music and Medicine*.

Treatment of Musicians' Problems

The treatment of musicians is the first category shown in Figure 2. Musicians may experience medical (eg, overuse syndrome and chronic fatigue syndrome) and/or psychological issues (eg, performance anxiety, depression, and substance abuse) that interfere with performance. These issues may be caused either by playing the instrument or by preexisting conditions, lifestyle issues, or causes unrelated to playing. In either case, the musician's performance is affected.

Musicians are treated by physicians who may be trained to address these specialized problems; the ultimate goal is to restore the musician's performance capabilities to the fullest extent possible and to prevent further problems or injuries. Musicians may also be seen by a wide range of health professionals, including physical and occupational therapists and psychologists, to name a few.

Articles published within *Music and Medicine* include descriptions of the medical treatment of musicians for

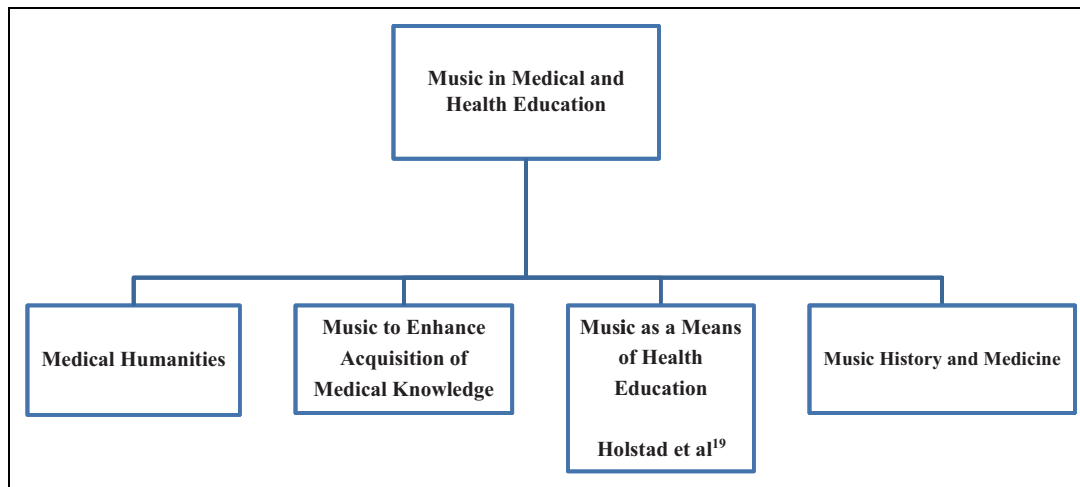


Figure 3. Music in medical and health education with a corresponding article from *Music and Medicine*.

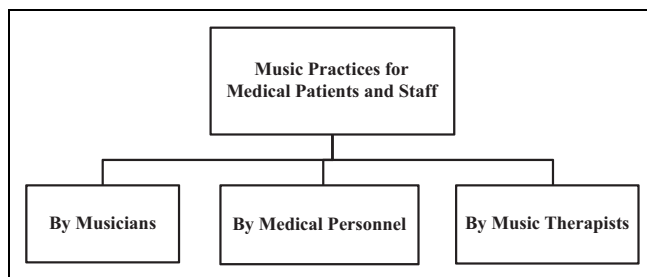


Figure 4. Music practices for medical patients and staff.

problems associated with singing⁴⁻⁶ or playing orchestral instruments.⁷⁻⁹

Music therapists also treat the performing problems of musicians, especially those that involve psychological issues and performance anxiety. In the present journal, an innovative model music therapy program is described.¹⁰

Lastly, music therapy may be used in conjunction with medical treatment to provide a comprehensive approach to problems of musicians. This combined treatment is included in the current journal.^{11,12}

Music in Medical Education and Health Education

In this large category, music is used to focus attention, to convey information in an accessible manner, to facilitate the recall of information, and/or to enhance the personal and professional skills of medical students and professionals (Figure 3).

The medical humanities, although difficult to define in a precise way,¹³ comprise a much broader, interdisciplinary area of practice (arts, social science, and humanities) of which music is only one component. A pedagogical definition of the medical humanities involves the use of “methods, concepts, and content from one or more of the humanities disciplines to investigate illness, pain, disability, suffering, healing, therapeutic relationships,

and other aspects of medicine and health care practice”^{13(p192)}, to enhance students’ self-awareness, humane practice, and understanding of their discipline; and to facilitate collaboration among professionals and patients.

Music specifically can be used to enhance medical students’ listening skills. For example, music may be used to conceptualize the “patient-doctor interaction as a dialogue with opportunity for listening and performance.”^{14(p7)} The student may learn skills analogous to those involved in the role of music performer as well as that of a member of the audience. Songs may also be used to help students understand cultural issues, suffering, and psychological states.

Although the medical humanities include the study of historical aspects of medicine, this area also represents the interface between the scholarly area of music history and medicine. There is a sizable literature on the medical problems of famous musicians from all periods of history and representing all types of musical genres. In this literature, there is often new speculation about the nature and treatment of the musician’s illness (eg, Rachmaninov’s suspected Marfan syndrome¹⁵; Woody Guthrie’s Huntington disease¹⁶), and new diagnoses may be suggested based on more current medical knowledge. Also, there are published studies on the medical, psychological, and sociological aspects of music practices of the past (eg, castration practices of singers¹⁷) or examinations of medicine as represented through music (eg, medical practices as exemplified through opera¹⁸).

Music can be used to convey complex information to medical students and professionals and also as a device to help them retain information. For example, original music is created by students to help them remember medical facts while preparing for board examinations. In a similar way, songs or song parodies may be used to present information to physicians (often in an entertaining or humorous way) in continuing medical education courses.

There were no articles on these 3 aforementioned topics found in *Music and Medicine*.

Music may be used successfully as a vehicle to provide health education to the public. Music makes this information accessible

Table 1. Music Practices by Musicians With Corresponding Articles From *Music and Medicine*.

Music Practices by Musicians
Harrison et al ²¹
Preti and Welch ²²
Larsen et al ²³
Curtis ²⁴

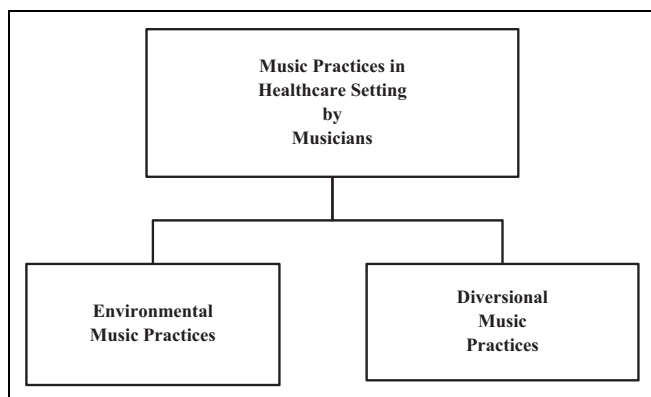


Figure 5. Music practice by musicians.

and facilitates its recall; health information conveyed through music can be modified to meet the information preferences of a wide range of populations. In the current journal, one example of a music-based health education program was identified, which could be included in this category.¹⁹

Music Practices for Medical Patients and Staff

There is a growing number of music practices for medical patients, and these are organized here according to the person providing the music and the intent of the practice (Figure 4).

Music Practices by Musicians

Professional and amateur musicians are providing music performances and concerts in public areas of hospitals or health care facilities, in various hospital units, in waiting rooms, and at bedside for small or large groups, for patients and/or for staff (Figure 5). Musicians may be paid or they may provide services on a volunteer basis; they may or may not be specially trained for this work.²⁰

The intent of the concerts, performances, or music provided can vary widely, depending on the training of the musician, the setting, and the needs of the individuals receiving the music. For example, the musician’s intent may be to rehumanize the medical environment (environmental practices). In this case, the focus is not necessarily on the persons in the environment, but on the environment itself, transforming it with music to make it more healing, less threatening, stressful, impersonal, and so on.²⁰ In contrast, the music may be person focused (to include, patients, staff, families, and/or visitors), with the intent of facilitating

Table 2. Examples of “Music Medicine” in *Music and Medicine*.

Clinical Population	Authors
Surgical patients	McCaffrey ³⁰ ; Schwartz ³¹ ; DeMarco et al ³²
Elderly patients	Khemthong ³³
Patients with dementia	Engström et al ³⁴ ; Janata ³⁵ ; Engström and Hammar ³⁶ ; Götell et al ³⁷
Patients with psychiatric disorders	Graham ³⁸ ; Ready ³⁹
Premature babies	Tramo et al ⁴⁰
Patients with stroke	Forsblum et al ⁴¹
Patients with Parkinson disease	Clair et al ⁴²
Patients receiving emergency care	Short et al ⁴³

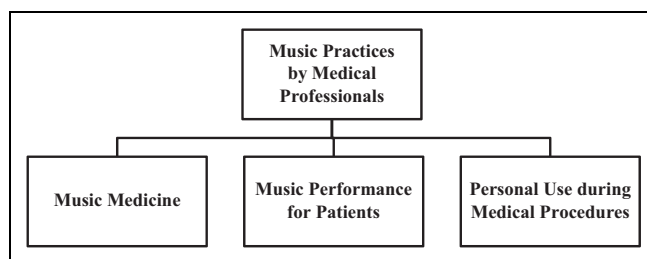


Figure 6. Music practices by medical professionals.

diversion from the medical environment, entertainment, relaxation, pain relief, normalization, and so on (diversional practices).²⁰

In *Music and Medicine*, 3 articles were identified that examined the benefits of music performances in health care settings.²¹⁻²³ A fourth article involved a collaboration between musicians and music therapy students in providing performances for patients receiving palliative care²⁴ (see Table 1).

Music Practices by Medical Staff

Medical professionals are also involved in providing music for patients, other medical staff, and/or themselves, and at least 3 practices have emerged (Figure 6).

Although there is a variety of terms for the first practice, music medicine (also known as music medicine^{25,26} or music in medicine) refers to the use of music by medical personnel to reduce anxiety, pain, and autonomic reactivity and improve the status and well-being of medical patients. Typically, prerecorded music is used, and this music is chosen either by the medical professional or by the patient who selects music from a variety offered according to preference. Although it is possible that a relationship exists between these 2 persons, this relationship does not evolve through the music experience but has its basis in the medical care provided.³

There is an extensive research literature on the effectiveness of music medicine in virtually every medical specialty area, and there are several reviews published in the Cochrane Library, which provide evidence for its use for certain patient groups.²⁷⁻²⁹

Table 3. Examples of Music Therapy in *Music and Medicine*.

Clinical Population or Topic	Authors
Neonatal intensive care	Stewart ⁵² ; Stewart ⁵³ ; Haslbeck ⁵⁴
Oncology patients	O'Callaghan ⁵⁵ ; Turry ⁵⁶ ; Gimeno ⁵⁷ ; Dun ⁵⁸ ; Logis ⁵⁹ ; Wormit et al ⁶⁰ ; Canga et al ⁶¹
Hospice patients	Forest ⁶² ; Clements-Cortes ⁶³
Rehabilitation patients	Jungblut et al ⁶⁴ ; Jungblut ⁶⁵ ; Gilbertson ⁶⁶ ; de l'Etoile ⁶⁷ ; Tomaino ⁶⁸ ; Hartley et al ⁶⁹ ; Ng et al ⁷⁰
Patients with psychiatric disorders	Ansdell and Meehan ⁷¹ ; Plener et al ⁷² ; Friedman et al ⁷³ ; Hsiao-Ying and Shih ⁷⁴ ; Hsiao-Ying and Shih ⁷⁵
Pediatric patients	Bower and Shoemark ⁷⁶ ; Bradt ⁷⁷ ; del Olmo et al ⁷⁸ ; Irons et al ⁷⁹
Critical care patients	Heiderscheidt et al ⁸⁰
Cardiology patients	Ellis et al ⁸¹
Patients with pain	Metzner ⁸²
Bereaved persons	Popkin et al ⁸³
Vibroacoustics	Punikanen et al ⁸⁵
Music therapy assessment	Mahoney ⁸⁶ ; von Moreau et al ⁸⁷

Table 4. Examples of Foundational Research Found in *Music and Medicine*.

Topic	Authors
Music neuroscience	Levitin ⁸⁸ ; Tényi et al ⁸⁹
Physiological responses to music	Murcia et al ⁹⁰ ; Harmat and Theorell ⁹¹ ; Warshaw ⁹² ; Harmat et al ⁹³ ; Krantz et al ⁹⁴ ; Gangrade ⁹⁵ ; Vickhoff et al ⁹⁶ ; Trappe ⁹⁷
Psychological responses to music	Sandstrom and Russo ⁹⁸ ; Silvestrini et al ⁹⁹ ; Wendrich et al ¹⁰⁰ ; Wheeler et al ¹⁰¹ ; Silverman ¹⁰²
Musical characteristics of special populations	De Bruyn et al ¹⁰³ ; Burns et al ¹⁰⁴ ; Punikanen et al ¹⁰⁵ ; Jeyes and Newton ¹⁰⁶

There are examples of these practices in *Music and Medicine*, including interventions for surgical patients,³⁰⁻³² elderly individuals,³³ patients with dementia,³⁴⁻³⁷ patients with psychiatric problems,^{38,39} premature babies,⁴⁰ patients with stroke,⁴¹ patients with Parkinson disease,⁴² or those receiving emergency care⁴³ (see Table 2).

In the second practice, medical professionals provide live music or music experiences for their patients, often through individual or group performances in public or patient areas of the hospital for entertainment, environmental, diversional, or therapeutic purposes (Figure 6).⁴⁴

Finally, medical professionals often use prerecorded music either through personal listening devices or through free field to enhance their concentration and focus, reduce their tension, and/or promote their efficiency as they engage in medical procedures, most typically surgery.^{45,46}

Music Therapy

“Music therapy is a systematic process of intervention wherein the therapist helps the client to promote health, using music experiences and the relationships that develop through them as dynamic forces of change.”^{47(p20)} Music therapy is used in a wide range of medical specialty areas and also in diverse nonmedical areas. Music therapy goals may be physical, psychological, spiritual, cognitive, developmental, and/or social in nature. Music therapy is distinguished from other practices involving music in the following ways: (1) its use of a therapeutic process of assessment, treatment, and evaluation, (2) the range of musical experiences offered to the patient, and (3) the relationship with the patient that evolves through the music.³

Music therapy is not a self-help procedure, although music therapists may provide assistance or “coaching” to individuals to develop personal health plans.

There is a broad literature regarding the use of music therapy with medical patients, and the outcomes of several meta-analyses^{48,49} and the Cochrane reviews^{50,51} provide some evidence for its effectiveness.

There are numerous articles classified as music therapy in the current journal. These articles address a wide range of medical conditions, including neonatal intensive care,⁵²⁻⁵⁴ oncology,⁵⁵⁻⁶¹ hospice,^{62,63} rehabilitation,⁶⁴⁻⁷⁰ psychiatry,⁷¹⁻⁷⁵ pediatrics,⁷⁶⁻⁷⁹ critical care,⁸⁰ cardiology,⁸¹ pain,⁸² and bereavement,^{83,84} as well as articles on vibroacoustics⁸⁵ and assessment^{86,87} (see Table 3).

Musicians may also organize and lead hospital performing groups, such as choirs comprising patients and/or staff members. The intent of this work is to build networks among those involved and provide diversional and normalized music experiences for participants as well as for patients and staff who may be the recipients of these group performances.

Foundational Research

There is a very large and diverse research literature that provides the foundation for many of the practices that emerge from the music and medicine interface. Although it is difficult to list all of the general topics in this literature, a great deal of which is “laboratory” rather than clinical, typical research areas include the neuroscience of music (neuroanatomy of music processing and production, effects of music on the brain, music perception, memory for music, brain plasticity,

relationships between music and attention, learning, memory, speech, language, motor functioning, and spirituality), physiological responses to music, and psychological responses to music. In addition, included in this category are musical characteristics, attributes, preferences, and abilities of special populations.

In the current journal, there are articles that can be categorized as follows: music neuroscience,^{88,89} physiological responses to music,⁹⁰⁻⁹⁷ psychological responses to music,⁹⁸⁻¹⁰² and musical characteristics of special populations¹⁰³⁻¹⁰⁶ (see Table 4).

Conclusion

There has been a burgeoning number of practices stemming from the interface of music and medicine in recent years. This article has presented one model for classifying these practices and has used the model to categorize articles published in *Music and Medicine* from 2009 through 2012.

It is expected that practices will increase even more rapidly in the years to come as research continues to document the benefits of music for medical patients, as attention to the treatment of problems of musicians becomes even more refined, as music takes a broader role in medical and health education, and as foundational research is enhanced because of technological advances. Lastly, it is hoped that new research and practice regarding the role of music in the prevention of illness will emerge, as this may be the new frontier for the combined fields of music and medicine.

Declaration of Conflicting Interests

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