

Medical - muses and music: an historical "medical-orchestra".Dedicated to Maestro Nachum Pereferkowich and "The Second Round Jazz Octet

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ABSTRACT

Paracelsus said that : "*Medicine is not only a science; it is also an art. It does not consist of compounding pills and plasters; it deals with the very processes of life, which must be understood before they may be guided.*" The meeting points of music and medicine, both art and science, are many: the stories of physicians who became musicians; diseases or infirmaries of famous composers; musical use while performing medical, surgical or

psychological procedures; and music as a mean of therapy. Along history, many physicians were deeply involved in music: medical practitioners may well improve their everyday skills of the patients-physicians interrelationship, being more humane, more patient to their clients and much more happier.

Key words: Music, medicine, history

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INTRODUCTION

"Every disease is a musical problem; every cure is a musical solution". So wrote Novalis (Georg Philipp Friedrich Freiherr von Hardenberg, 1772 -1801).

Novalis was a Romantic poet and philosopher as well as biologist and geologist. He died probably before knowing that his famous relative, Karl August Fürst von Hardenberg (1750 – 1822), Prime Minister of Prussia and participant at the Vienna congress, suffered from deafness [1] . The cure for his, or Beethoven's [2] or Goya's deafness, was definitely – a solution which could enable them to hear and enjoy music. The cure for the biblical King Saul's depression, came through young David's music (I Samuel 16:14-23).

Neurologist-writer, Professor Oliver Sacks said *power does have a dark side. A daily example of this would be musical brain-worms, the annoyingly repetitive musical phrase that may run through one's mind for days on end. And of course music may be seen as dangerously seductive, as much of our literature reminds us. In Greek mythology, it was the bewitching music of the Sirens that lured sailors to their destruction, and Tolstoy brings up a similar theme in his story "The Kreutzer Sonata." Using loud music as torture draws on these qualities of music, as well as simple sensory overload. I personally find the assault of loud public music—in stores, restaurants, airports—a minor form of torture. One wants to listen to one's own music, in one's own way, not to have it force-fed, especially at great volume* [3].

While reading the biography of a famous American neurosurgeon and neuroscientist, AR Allen [4], somehow, I was not surprised to find out, that he was also an accomplished musician, (as well as linguist, polyglot, mathematician, photo-grapher and draftsman). Allen composed opera, songs, and some church music. He organized the *Savoy Opera Company* for the amateur production of Gilbert and Sullivan's operas. Allen trained all the cast and chorus, and conducted the orchestra. He wrote the music for a Christmas Carol, one of the hymns of the "war hymn-book" entitled: "*For God and Country.*" Allen was the musical editor of the revised edition of: "*The Hymnal.*" He never took a lesson on the piano or the violin, but his knowledge of the theory of music and his natural musical gifts were such, that he could play with both. Sadly, Major Allen, while directing his battalion at the village of *Nantillois*, received a fatal shrapnel wound.

Along history, many physicians were deeply involved in music. Spiegel wrote that "*an aptitude for music goes hand in hand with a mathematical mind...but musical accomplishment is more widespread among doctors than in any other thinking profession....long Long before anyone*

demonstrated any scientific basis for music therapy" [5].

Time-line of medicine and music

Medicine and music [6] have been overlapping areas: both are science and art, and reflect human communication and interaction. In ancient Greece, Apollo was regarded as both the god of music and medicine. *Eurythmia* was referred to rhythm and adaptation through movement and sounds. Plato said: "*Music gives soul to the universe, wings to the mind, flight to the imagination and life to everything.*" The Greeks' education and philosophy, put an emphasis on both physical education and teaching poetry and philosophy. Protagoras and Plato thought, that human performance relies on *eurythmia*. The physician Aescelapius, son of Apollo, was surrounded by the muses. Lycurgus of Sparta, who lived around the end of the 8th century BC, appointed the poet-musician Thaletas, to assist him as a thinker and to become his people's guide and mentor. "*Music strengthened or weakened the character, created order or anarchy, brought peace or unrest*" [7]. The 6th century Roman philosopher Anicius Manlius Severinus Boethius, wrote a textbook on music (*De institutione musica libri quinque*, unfinished).

The Roman Priests' Order of *Oratoriani*, was established in 1558 by Philipo Neri, who opened an asylum for the treatment of poor pilgrims and the sick. The Priests gathered in a small praying room-the *oratorion*, singing and playing for their patients. Resonance was recognized by Galileo Galilei (1564 – 1642), (he studied medicine but never practiced, became a lutenist player, physicist, mathematician, astronomer, and philosopher), with his investigations of pendulums and musical strings beginning in 1602. His father, Vincenzo Galilei, was a famous lutenist, composer, and music theorist; he called his son after an ancestor, Prof. Galileo Bonaiuti (1370 - 1450) a "medico italiano" [8]. At the University of Pisa Galileo Galilei studied medicine. As a student, he noticed a swinging chandelier, which air currents shifted about to swing in larger and smaller arcs. Then he began to study the pendulums. Later, he devoted himself to geometry, astronomy and physics. The tuning-fork, which also serves as an essential tool for neurological examination, was invented in 1711 by King James the II 's personal musician, John Shore, (1662 – 1752) a close friend of George F. Handel and Henry Purcell. Later, Handel gave this fork and other items to the Foundling Hospital in London [6].

Surgery and music

Surgeons who listen to music, any favorable music: classical, jazz, or country, while operating, are more relaxed. Adding music to the

process of anesthesia used in childbirth, whether local, regional or general, seems to benefit the staff and the laboring women. Preoperatively music reduces anxiety, stress, and fears among the patients, and the staff as well [9-11]. A few examples of surgeons who became musicians: John Ring (1752–1821), a surgeon, poet and a classical scholar. In London, he attended the lectures of Percivall Pott, William and John Hunter. He received the diploma of the Surgeons' Company in 1774, and began to practice medicine in London [12]. After he met Dr. Edward Jenner and adopted his novel inoculation method, they became close friends. Besides his books on vaccination (1804 - 1805), Ring was the author of: 'The Commemoration of Handel,' published anonymously in 1786 [13].

"The author here, John Ring (1752–1821), was 'a man of extraordinary energy' (Oxford DNB): a surgeon by profession, who published a number of medical works, and a staunch advocate of smallpox vaccination, he was also a fine latinist whose translation of Virgil saw him elected to the Royal Society of Literature. He was evidently also a lover of music, and his poem describes the sights and sounds of the concert. Though published two years later, it appears, he attended the first commemoration, as he writes 'Now five times, five encircling years have roll'd roll'd / Since we no more, thy face on earth behold', and Handel died in 1759" [14]. Ring also translated Geddes's 'Ode to Peace,' 1802, Christopher Anstey's 'Carmen Alcaicum,' addressed to Jenner, 1804, and 'The Works of Virgil, partly original and partly altered from Dryden and Pitt' (London, 1820) [12-13].

Christian Albert Theodor Billroth (1829 – 1894) was an Austrian surgeon, "the father of abdominal surgery, and an amateur musician. He was a friend of Johannes Brahms, a leading patron of the Viennese musical scene, and one of the first to attempt a scientific analysis of musicality. Billroth was a talented pianist and violinist. He never saw science and music as being in conflict, and he considered the two to complement each other" [15-17].

Louis Boyd Neel (1905–1981) was an English - Canadian conductor who is perhaps best known as the founder of the English Chamber Orchestra. He served as a House Surgeon and Physician at Saint George's Hospital, and Resident Doctor at King Edward VII's Hospital, London [18]. Neel studied music theory and orchestration at the Guildhall School of Music, parallel to his medical work. In 1952, Neel was nominated the Dean of the Royal Conservatory of Music at Toronto, Ontario. For 18 years, he worked there, reorganized the Faculty of Music. He later formed the Hart House Orchestra in Toronto.

Dr Jeffrey Tate CBE, (1943, Salisbury) is a worldwide known English conductor, who left

medicine and ophthalmology in order to study music. He studied at Farnham GS, Christ's College Cambridge (MA, MB BChir), and at St Thomas' Hospital, London. Tate was born with spina bifida and has been president of U.K. Spina Bifida charity - ASBAH, since 1989 [19].

Music, Neuro Psychiatry and Philosophy

The dissertation "De Anatome, Morsu & Effectibus Tarantulae (Of the Anatomy, the Bite, and the Effects of the Tarantula (1696) by the Apulian doctor Giorgio Baglivi, is and the most reliable source on the *tarantism* and the attempt to explain the musical cure by physical reasons, namely, transpiration [20-22].

There was a link between *tarantism* and melancholy. From the 11th century and on, in southern Italy and Spain, there were strong suggestions that there is no organic cause for the "summer epidemic" among women with "elevated excitability and restlessness that seized them." It was suggested that the cure was based on frenzied dancing to prevent death from *tarantism*. Physicians like Giorgio Baglivi, 1668-1707, Epiphanio Ferdinandi (1569-1638) and Kircher (see below), found a possible explanation that a certain tarantula bites can be blamed for this phenomenon. So, musicians played *tarantati* in order to cure [23].

Robert Burton (1577-1640) wrote on the healing power of music to raise the spirits of the melancholics [24]. François Leuret (1797 –1851), a French anatomist and psychiatrist from Nancy, became the chief physician at the Bicêtre in Paris, and advised strongly for a daily musical lessons to his psychiatric patients [25]. Dr. Thomas Willis (1621-75) coined the term *neurology* in his *De anima brutorum* (1672). He postulated the existence of in-corporeal soul, which is located in the brain, and the corporeal, which is based on medical/spiritual/chemical grounds. Willis and Rene' Descartes, used the model of the *keyboard instrument* to understand the mind-body interactions. Both Willis and Thomas Cheyne (1671-1743), thought that the soul was located in the brain and the nerves "terminate inwardly like a musician by a well-tuned instrument." The body is in-tune, and "its music" is harmonious. Lorch [26] described Willis theory on "how musical talent may be understood in terms of the structure, action, and use of the human brain...with respect to notions about hearing, auditory perception, memory and music how music is instantiated in the brain and discusses individual differences in musical ability in development." Arthur Schopenhauer (1788 – 1860) was a German philosopher known for his pessimism. He believed that emotional, physical, and sexual desires can never be fulfilled. "Schopenhauer believed that while all art was useful in understanding the nature of existence, music stands apart from the other arts in its ability

to render philosophical insight: Schopenhauer's meaning in saying that music could "exist even if there were no worlds at all" is that music does not deal in material referents. There are (generally speaking) no things in the material world against which a musical piece could be validated to render it coherent. Whereas a sculpture is modeled after some real-world object without which it would not 'make sense';, sense'; and a building is composed of material things whose structure is governed by immutable laws of physics, which must be heeded for a building even exist; and poetry is composed of words invoking in the minds of its listener specific things (even if abstract things); music has no such real-world component. Certainly music is produced by physical objects, but that's irrelevant because the music itself does not explicitly refer to anything physical, as do prose, poetry, and sculpture. So, Schopenhauer is claiming that music would 'make sense' even if all that existed in the universe were that music itself. Music needs no specific, referent 'thing', (although it can be inspired by things)" [27]. The philosopher played music, loved theatre, and was known as a *misanthrope*.

An interesting meeting-point between music and neurology had occurred when Ernest-Charles Lasègue (1816-83), on one Sunday morning, thought of the question which he had been asked by Inspector General Dujardin-Baumetz, how to discover the malingerer simulating *sciatica*.

He promised to study the question: it was ever-present in his thoughts. While smoking his pipe, he saw Mme. Lasègue seated by the piano while his son-in-law, Cesbron, is tuning his violin. Is not the string stretched over the bridge like the sciatic nerve which is made taut on the ischium when the lower extremity is elevated? Undoubtedly as he listened to the classical music, he has formulated the answer to the Inspector General's question. The next day he looked for the sign in his clinic.

The sign did not, however, appear in his *Considération sur la sciatique* [28]. Detective work by Robert Wartenberg (1887-1956) revealed that it was only years later that his pupil J.J. Forst described it [29]. More than a century before that, at Halle, Professor Ernst Anton Nicolai, (1722-1802) described the body's fibers (muscles, nerves, blood vessels), as either dissonant or consonant. Music, he wrote, can affect our emotions, and also change our internal organs.

A humorous intermezzo was made by Peter Ustinov (1921-2004), an English actor, playwright, film-script-writer, novelist and storyteller, who coined a new medico-musical syndrome: Ustinov's time syndrome; Time-delusions caused by overwhelming exposure to musical drama.

The affected person relaxes in his opera chair at 18.00 p.m. watching the curtain rise for a

Wagner opera. When looking at his watch four hours later, it is 18.35 pm. Based on Peter's Ustinov description of a Wagner performance... he later said: "I was irrevocably betrothed to laughter, the sound of which has always seemed to me to be the most civilized music in the world."

Medicine and music: not an odd couple

The Basel based Dr. "Paracelsus", (Philippus Aureolus Theophrastus Bombastus Von Hohenheim (1493–1541), was a Renaissance physician, botanist, alchemist, astrologer, and occultist, who is credited for giving zinc its name, (*zincum*), played the organ for Prince Sigismund and Maximilian the 1st of Germany.

" Life is like music; it must be composed by ear, feeling and instinct, not by rule. Nevertheless, one had better know the rules, for they sometimes guide in doubtful cases, though not often" Paracelsus [30].

In Robert Browning 's "Paracelsus," we can read:

*"The melodies I heard all night; I could not
Get to him for a cold hand on my breast ,
But I made out his music well enough,
O well enough "...[31].*

At the same time, in France, lived and flourished Dr Francois Rabelais. Most of his life he spent in hiding. Paracelsus was by all means an extrovert. Both loved music after "*Rabelais and Paracelsus appear to be polar opposites of the 15th century intellectual universe; the French fabulist, wildly imaginative and outrageously satirical; the German physician-lacking irony and grimly obsessed with a sense of mission. ..on strange musical instruments constructed of the common-place materia medicae, the turbith, scammony, cassia, rhubarb prescribed by Paracelsus. Lady Quintessence plays melodies, which correspond to each genus of disease. The "virtues" that emanate like music of the spheres from her person and instruments, heal the patients without physical contact"... [32].*

Jacquet de Berchem (1505–1567) was a Franco-Flemish composer of the Renaissance, active in Italy. He was famous in mid-16th-century Italy for his madrigals, approximately 200 of which were printed in Venice, some in multiple printings due to their considerable popularity. As evidence of his widespread fame, he is listed by Rabelais in *Gargantua and Pantagruel* as one of the most famous musicians of the time, and the printed music for one of his madrigals appears in a painting by Caravaggio (*The Lute Player*) [33].

The monk-physician-satirist Rabelais, was familiar with the liturgic-sacred plainchant and polyphony of his time. As a humanist, he studied music too [34-35].

Paracelsus [36] wrote that: "*music was an herb garden for such fantasies and deranged brain and senses*" [37].

Another 16th century famous Swiss physician who adored music was Thomas Platter the Younger (1574–1628). He was a physician, traveler and diarist. He wrote a *journal* between 1595 and 1600 about his life as a medical student in Montpellier and his later travels in France, Spain, Flanders, and England. He described the late sixteenth-century European culture: medical education, street and Carnival life in Barcelona, European theatre, and disgusted from the slave trade. In 1571, he was appointed the city physician and professor of the University of Basel, and was a famous as a collector of art and musical instruments [38].

The British George Etheridge was a Scholar of Corpus Christi college in Oxford. In 1553, he was made Royal professor of Greek at Oxford. Etheridge chose to study medicine and worked at Oxford. He taught privately, classics, music, and logic. Pits, his cotemporary said, "*he was an able mathematician, and one of the most excellent vocal and instrumental musicians in England, but he chiefly delighted in the lute and lyre. A most elegant poet, and a most exact composer of English, Latin, Greek, and Hebrew, verses, which he used to set to his harp with the greatest skill.*" Etheridge was a harper. His musical performances were appreciated by King Henry the Eighth [39].

Thomas Campion (1620-1567) was a lawyer, physician, composer, a writer of masques, and a poet. Campion's poetries were written in Latin. They were published 1601-1617 in four books of (1601). In 1602 Campion, published: "*Observations in the Art of English Poesie,*" Campion received the M.D. degree from the University of Caen in 1605. After returning to England, Campion practiced medicine in London. He wrote several masques, which were performed at the court of James, I In 1613, he published *A New Way of Making Fowre Parts in Counterpoint*, a book on music theory [40-41].

Athanasius Kircher (1601/1602–1680) was a German Jesuit scholar/physician who published around 40 works, on oriental studies, geology, and medicine. His enormous achievements, has been honored with the title "*master of a hundred arts.*" Kircher was also a linguist, Egyptologist, geologist, microscopist, inventor (magnetic clock, various automatons, the first megaphone, and the magic lantern.

"*He was interested in sound and music. Statues in his museum seemed to talk as he devised horns and tubing to bring street noise through the walls and out of the statues' mouths. The porter who kept the front door to the Roman College was able to speak to Kircher through tubes to let him*

know when visitors were waiting to see his museum. He also devised instruments that used water or wind power to create music. In one fanciful design, a keyboard extended back to a series of boxes. The keys had pins at their tips, under which were tails of cats arranged according to the pitch of their meows. Hitting a key would produce harmonized howling. There is no evidence that Kircher ever actually made such an instrument" [42].

Kircher devised a number of boxes that contained elements for combining into larger units. One of them allowed budding composers to produce four-part harmonies. This mathematical box, demonstrated a number of mathematical functions in arithmetic, geometry, astronomy, time-keeping, and music.

During the 17th-18th century, there were many physicians who contributed to music: John Arbuthnot (1667–1735) was a Scottish physician, satirist and mathematician. He had famous friends at the Scriblerus Club (Jonathan Swift, Alexander Pope, as well as George F. Handel, Isaac Newton, Lord Chesterfield, William Pulteney and John Gay. He composed liturgical music [43-44].

Richard Brocklesby (1722–1797), was an English physician, who was educated at Ballitore (Ireland), Edinburgh, and finally graduated at Leiden in 1745. He succeeded John Pringle as Surgeon General of the British Army in 1758, and served in Germany during the Seven Years' War. On his return, he practiced in London. In 1764, he published *Economical and Medical Observations*, which made suggestions for improving the hygiene of army hospitals. Among his close friends, were Dr. Samuel Johnson and Edmund Burke. He wrote on music as a therapeutic method [45].

Thomas Henry Harrington composed 70 musical pieces. William Withering (1741–1799) was an English botanist, geologist, chemist, physician and the discoverer of digitalis, played on a few musical instruments [46].

Hermann Boerhaave of Leiden (1668-1738) [47-49] was a master of "bedside teaching" and can be regarded as the originator of modern medical education. "*Boerhaave was a man of erudition with a wide knowledge of literature and music. Several former students were known for their literary output; there were poets, travel writers and biographers as well as medical and scientific authors*" [47]. "*From the time of Hippocrates, no physician had more justly merited the esteem of his contemporaries and the admiration of posterity than Boerhaave. To uncommon intellectual abilities, he united those amiable qualities of the heart which give them so great a value to society. His appearance was simple and venerable. He taught very methodically, and with great precision; his style was eloquent, dignified and graceful. He sometimes also gave his lectures a lively turn; but his raillery was never*

coarse or satirical. He possessed remarkable powers of memory, and was an accomplished linguist. A declared foe to all excess, he considered decent mirth as the salt of life. He was fond of music, with which he had a scientific acquaintance; and during winter, he had a weekly concert in his house. It was his daily practice throughout life, as soon as he rose in the morning, which was generally very early, to retire for an hour to private prayer and meditation on some part of the Scriptures. He often told his friends, when they asked him how it was possible for him to go through so much fatigue, that it was this practice, which gave him spirit and vigour in the business of the day" [48].

At the end of the 1st World War, professor of dermatology at Strasbourg, Lucien-Marie Pautrier, 1876-1959, ("Croix de Guerre" and "Chevalier de la Légion d'Honneur"), served two years and retired, occupying himself with art and music. He was a close friend of the Rumanian violinist Georges Enesco, known for his interpretation of Bach and his work in Romanian style. He founded a society of the Friends of Music in Strasbourg and was largely responsible for the 21st Festival of Music in that city. He founded the Society of Friends of the avant-garde cinema and finally whilst he was president of the Friendly Society of the University of Strasbourg, he managed to find the necessary funds to create a centre for research in experimental surgery. His name is associated with a few eponyms : Brocq-Pautrier syndrome, Pautrier's abscess and Pautrier-Woringer syndrome [50].

"Wolfgang Amadeus Mozart: In Selbstzeugnissen und Bilddokumenten," was written by Aloys Greither, 1914-1986, who was a German dermatologist, [his name is connected with Greither's keratosis, Meleda syndrome, and Unna-Thost syndrome]; Greither's main interests were in music and art history. Before studying medicine he studied philosophy, psychology and education [51].

Pulmonary rales, heart beats and music

It was in 1754, when the Austrian physician Leopold Auenbrugger (1722-1809), introduced the method of percussion of the chest. In 1781, Auenbrugger wrote the libretto for the comic opera *Der Rauchfangkehrer* by Antonio Salieri (1750-1825). Perhaps his musical background helped him to develop his percussion method [52].

The medical student René-Théophile-Hyacinthe Laënnec (1781-1826) wrote poetry, played the flute, and loved dancing. Later, he became a famous anatomist and clinician. In 1816 Laënnec" got the idea for the stethoscope from some children playing near the Louvre. The children applied their ears to two ends of long pieces of woods to listen to the transmission of sounds of pin scratches, etc." His book *De*

l'auscultation médiate became a corner stone of clinical medicine [53].

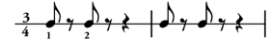
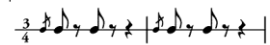
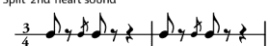
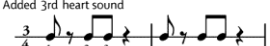
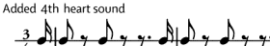
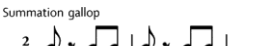
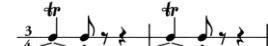


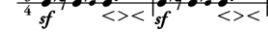
"*The Hodgkin-Key sound*" (after Thomas Hodgkin, 1798-1866, and Key, 1798-1849) is a phenomenon, which is typical in aortic insufficiency. It is a strong "musical" sound that can be sometimes heard at a distance, resembling the shriek of a seagull, and therefore, often referred to as "seagull'scry."

Skoda's resonance (Skoda's sign and Skoda's tympany) is the increased resonance heard on percussion at the upper part of the chest, with flatness below it, heard above a large pleural effusion or area of consolidation. It is a peculiar, high-pitched sound, less musical than that obtained over a cavity.

Josef Skoda (1805-1881) who was a Bohemian clinician, classified the various sounds obtained on percussion according to their musical pitch and tone. "Skoda's resonance" is an important diagnostic sign in pneumonia and pericardial effusion. Following Skoda's work, percussion at last gained general acceptance as a diagnostic procedure (54).

Modern connection between heart beats and music was determined by jazz drummer Milford Graves (played with Albert Ayler, Paul Bley and others in the New York avant-garde. "*He spends a great deal of time exploring how a musician helps to heal the human heart. Some doctors say the research Graves is doing in his basement in Queens is just as significant as work being done in medical laboratories... Graves listens to the heart rhythms of volunteers using a host of diagnostic tools, including a custom-built stethoscope and sensors that pick up the electrical impulses that cause the human heart to beat. Software then parses the data, allowing Graves to focus on the micro-rhythms within a single heartbeat. Graves says a healthy heart — like a good jazz drummer — emphasizes the triplets (1-2-3, 1-2-3), not the eighth notes (1-2-3-4, 1-2-3-4). "If you've got a stiff heartbeat that means your blood is like 'squirt, squirt.' Not a nice flow," Graves says. "I want to look at that and see what's happening." If Graves thinks, something is wrong, he'll manipulate the sound, perhaps by speeding it up or slowing it down on his computer. He'll then use this counter-rhythm to try to nudge the heart back toward a more normal pattern. The manipulated sounds are put back into the volunteer's body, either through acupuncture needles or through their ears. Harvard Medical School professor Baruch Krauss says what Graves does isn't so different from what emergency physicians try to do for patients with abnormal heartbeats. Krauss stresses that Graves' work isn't ready for patient therapies, but he calls it "exciting, extremely original and innovative" [55].*

The use musical notation to represent heart sounds and murmurs, was described interestingly [56].

<p>Heart sounds</p> <p>Normal 1st and 2nd heart sounds</p>  <p>Split 1st heart sound</p>  <p>Split 2nd heart sound</p>  <p>Added 3rd heart sound</p>  <p>Added 4th heart sound</p>  <p>Summation gallop</p> 	<p>Left-sided murmurs</p> <p>Aortic stenosis</p>  <p>Aortic regurgitation</p>  <p>Mitral stenosis</p>  <p>Mitral regurgitation</p> 
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Does stridor, wheeze or rhonchi have also a musical quality? Wheeze is high pitched musical sounds especially produced in the setting of broncho-spasm, mucosal edema or excessive secretions. Rhonchi is low-pitched sonorous sounds and may have been gurgling quality. They originate in larger airways when there is an excessive secretion, abnormal airway collapsibility due to repetitive rupture of surfactant film covering alveoli. Rhonchi frequently clear after cough post tussive clearing. And the bowel sounds, which may be tinkles splashes rush: so musical! [57].

Anatomy, Pathology and Music

Caspar Bartholin the Younger (1655-1738), was a Danish physician-anatomist who first described in 1677, the "Bartholin's gland." In 1674, at the age of 19, the King appointed him as Professor of Philosophy. He published a book on ancient musical instruments [58-60]. Friedrich Gustav Jacob Henle (1809-1885), the author of "On miasmata and contagia," "Handbook of General Anatomy," "Handbook of Rational Pathology," and more, who 16 eponyms are called after him, made him a world-wide known and outstanding anatomist, histologist, teacher and researcher. He was a close friend of the painter Gustav Magnus, the scientists A. von Humboldt, HLF von Helmholtz, JL Schoenlein and the composer Felix Mendelson. Music was his true love.

The most vivid recollection the Henle children retained of their father was his constant humming and whistling, for this merchant was a musical enthusiast. He was not a performer himself, but there were few operas or concerts which he missed, and after the first bars of any selection, he could finish the melody. Henle cultivated business because it is necessary to live, but he didn't live until the opening notes of the overture... Jacob studied the violin under Kreuser, and Marie took lessons on the piano, and soon brother and sister could play duets. It was found that Jacob inherited

his father's musical memory, and could reproduce entire acts of even infrequently performed operas. His musical ability, however, could not overcome his boyish passion for noise... Another friend of this period was Felix Mendelssohn. It was Henle's privilege to witness the origin and development of some of his compositions, and the musician became so attached to the scientist, that when he passed through Coblenz, he paid a special visit to Henle's family. Sister Marie's talent for music eclipsed even her brothers, and Mendelssohn enchanted her with a private performance of the overture to Midsummer Nights Dream, which he had composed in his seventeenth year, and, which carried him to fame's pinnacle. Some years later, Henle and Mendelssohn might have been related by marriage, but when Henle proposed to one of the Mendelssohn girls, he discovered she was already secretly betrothed... The ardent-hearted Henle was deeply wounded, and sought solace in music. Already skilled on the violin, he now took lessons on the violincello, and after mastering the bass member of the family, became conspicuous in the musical circles of Zurich as singer, violinist and 'cellist. The same fingers which. It could dissect a cadaver so adroitly, knew also the wondrous secrets of four strings of catgut..... Henle organized musical and theatrical circles. His home became the headquarters of visiting artists, and his position as director of the museum enabled him to utilize the museum's hall for concerts. Renowned men and women participated in Henle's musical evenings: here were heard Joachim's violin, and the mezzo soprano of Amalie Weiss [61].

Music and Medicine-the present perspectives

The art of medicine and music, although two separate fields, are interwoven along history [62-63]. The last decades witnessed new phenomena: musicians contract various, medical or surgical (and sometimes psychological) professional problems [64-65] which necessitate a close cooperation between musicians, teachers, physicians and allied health professionals. The field of music-therapy, has entered the everyday practice of rehabilitation medicine, geriatrics, psychiatry and general education. As Professor Oliver sacks said: "This is a very specific use of music therapy, but there are many others. People with Alzheimer's or other dementias will often respond to music even when they are able to respond to be little else. Music, especially familiar music from one's early years, can help to orient and organize such people."

Davidoff [66] advised physicians to learn from musicians "about better ways to become and remain expert performers in health care." Similarly, Finestone and Conter rightly suggested [67] that medical students should learn and implement the skill of *acting* in medical practice. The proper interaction between physicians and

patients should include ethical corner stones, adequate behavior, clear "*expressive behavior*" and some elements of "*acting*" and rhetoric [68]. Being "*good*" means, better knowledge, dignity, empathy to the patients various needs, and proper treatment. It is hard to analyze how music effects, or affected, medical practice. Each physician or surgeon whose education and personal talents, led him or her to write music, perform music or sing, saw, and sees these musical engagements as a relief, as a hobby, as an added valued area of humanism. Arts today, interact with science, technology and medicine. Furthermore, these interfacing have led us not only to a deeper and thorough look at the arts, but it enlarges standpoint, widens our horizons. The poets did well to conjoin music and medicine, because the office of medicine is but to tune the curious harp of man's body." It said Francis Bacon, and Oliver Wendell Holmes wrote: "*Take a music bath once or twice a week for a few seasons. You will find it is to the soul what a water bath is to the body*".

Medical practitioners may well improve their everyday skills of the patients-physicians inter-relationship, being more humane, more patient to their clients and much happier.

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