

Full-Length Article

COVID-19: *Implications and considerations for NICU music therapy*

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Abstract

This article outlines the shifts in NICU music therapy due to the COVID-19 pandemic in Italy, Japan, and Colombia, from the beginning of the outbreak in each of the countries until September 2020. Detailed information will be provided on how the pandemic has changed hospital policies and has had an impact on the families and the music therapy services. Furthermore, the authors discuss current biosecurity protocols, parental visiting guidelines, telehealth strategies, and the financial impact of the pandemic. While the way healthcare workers and healthcare institutions cope with the current situation may be unique according to cultural and societal particularities in each country, many overlaps between the three countries were found.

Keywords: *Music therapy, Neonatal Intensive Care Unit (NICU), COVID-19, preterm infants, families*

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Note: The COVID-19 situation is constantly changing and will be even different in the world by the time when this article has been issued. It should be noted that the information in this article was compiled based on the information of the hospitals where the authors work from the time of beginning of the outbreak in each of the countries to September 2020.

Introduction

The COVID-19 pandemic has changed many facets of personal and professional life all over the world and with 40 million infections and more than 1,100,000 deaths [1], it certainly has left deep scars in many of us. While at the point of writing this article many countries are just beginning to transition back to a post-pandemic normality with uncertain outcomes and duration, profound societal changes have taken place on both macro and microlevels. The healthcare sector in particular has faced tremendous structural, logistical, financial and mental health challenges, whose costs have yet to be

evaluated on the long term. This is especially true for the many services that take place inside hospitals and particularly in intensive care.

Recent meta-analyses estimate a pooled 26% of ICU admission of patients with Severe Acute Respiratory Syndrome (SARS-CoV-2) novel coronavirus and a mortality prevalence of 31-41.6% [2-3]. Besides the pain, grief and distress that this causes in patients and their families, such a high demand for intensive care and loss of lives also comes with elevated psycho-social costs for health care workers (HCW) themselves. HCW caring directly for COVID-19 patients are the ones who are most affected by mental health challenges, including increased levels of depression, anxiety and insomnia [4-5]. Similar results have also been reported for families of HCW in intensive care [6].

While much of the burden is certainly concentrated in Adults Intensive Care Units, all hospital services are negatively affected by the pandemic, and the Neonatal Intensive Care Unit (NICU) is no exception. Pregnant women are generally not more likely to be infected with COVID-19, but if they do so, complications occur more frequently during the second and third trimester of pregnancy, including a higher likelihood of preterm birth [7-8]. Current recommendations for the care of newborns and mothers with COVID-19 include contact and droplet precautions, the use of Personal Protective Equipment (PPE) along the perinatal care spectrum, and the subsequent transport of the mother to the inpatient unit and

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the newborn to the NICU [7]. While vertical transmission of the virus from the mother to the baby during pregnancy or childbirth has been reported [8], transmission is more likely to be produced horizontally during postnatal contact [9]. A concern has been raised that the already elevated stress and anxiety levels of many NICU parents may get exaggerated by the current pandemic, which again could have a negative spillover effect on the parent-infant relationship and as a result, on infant development [9]. While such a situation would normally be a call for an increased presence of HCW concerned with parental mental health and the parent-infant relationship, many music therapy services in the NICU around the globe had to - at least temporarily - interrupt their services and/or adjust their interventions using telehealth strategies. In this article, music therapists, doctors, and mental health care specialists discuss the shifts in healthcare policies, the impact on the families, the changes in clinical practice, and the financial impact of the pandemic related to the music therapy services in NICUs in Italy, Japan, and Colombia.

Italy

The new COVID-19 disease appeared in Italy in January 2020 [10-11] and due to the rapid increase in the number of coronavirus cases, the government classified it as a pandemic on March 9th. Northern Italy was the most affected area in the country, and particularly the Lombardy Region. In the NICU of Varese, the access for users and the admission procedures of parents have changed, as well as the daily practices of the staff. For parents and preterm infants, any kind of visit by relatives and friends has been prohibited. The Italian health care system was overwhelmed.

Both the Italian National Statistical Institute and the Italian government stated that "the impact of COVID-19 and the lockdown on the Italian economy is still profound and extensive" [12-13]. After the first precautionary measures adopted in March, the government proclaimed a state of emergency and put in place restrictive measures to contain the contagion and declared a lockdown on the entire national territory. Subsequently, the Italian government issued the "Cura Italia" decree for the economic and social support of the Italian population. In those days, the only images were the numerous coffins that came out of the hospitals with thousands of deaths and the people looking out on the balconies of the house to sing and play to give strength to those who fought with death. On May 4th, the Italian government declared 'Phase 2', in which return to work was granted for some sectors of the society and people could see their closest relatives.

'Phase 3' began on June 15th and ended the lockdown, allowing the Italian people to be able to leave their homes and travel abroad, but with the obligation to wear masks and prohibitions on gathering and maintaining social distancing.

As of 1 October 2020, there were 317,409 confirmed cases, 107,051 of them in the Lombardy region. On a national level, Italy had 35,918 deaths, with more than 50% coming from the Lombardy [14].

Shifts in healthcare in the NICU

The NICU of Varese initially suspended all outpatient activities related to the post-discharge, follow-up, and other therapeutic activities provided by HCW (psychologists, music therapists and osteopaths). The outpatient clinics were temporarily destined for COVID-19 emergencies, but the regular function of the outpatient interventions resumed in May 2020. Also, the support of volunteers and the admission of the relatives and inpatient users were currently suspended. All medical, nursing and mental health professionals, including the music therapist, are constantly screened for a possible COVID-19 infection. At the time of writing this article, they are still subjected to serological screening tests, and in case they are positive, are sent to do oral salivary tests to see if the positivity is still in progress. In case an infection is confirmed, HCW are sent to quarantine for at least 14 working days in their homes in isolation if asymptomatic or slightly symptomatic, while hospitalized if severely symptomatic. If testing is negative, access to the NICU ward is granted, but with strict daily body temperature checks, monitoring of the entry and exit from the hospital, the use of PPEs (masks, sterile gown, sterile clothes, sterile shoes, protective goggles or protective visor), access to new locker rooms isolated from the entrance of the NICU, constant hand washing, and interviews with the NICU facility manager about the HCWs' and their family members' health.

Impact on the families in the NICU

The first months of emergency were the hardest for parents. In addition to the trauma of premature birth, they were catapulted into a hospital system in crisis and under siege by COVID-19. Additionally, they had to undergo screenings and were placed in isolation or quarantine if infected, away from their children. Fortunately, at the NICU in Varese (30 beds), and in collaboration with the medical and nursing staff, the psychologist and the music therapist connected with the parents in isolation through electronic devices (tablet or mobile phone) and through the applications such as 'WhatsApp' or 'Skype', showing them their baby in the incubator. Also, thanks to the remote music therapy program, it was possible to bring the voices of the parents inside the hi-tech incubators, through singing and talking, trying in this way to keep the parent-infant relationship alive.

At the beginning of the pandemic, parents of preterm babies could always enter the NICU and stay as long as they wanted, but on condition that just one parent entered at a time. After May 2020, the doors were reopened to both parents and they can now also sleep in the family room again. However, for other relatives, visits are still suspended. With

respect to the access of parents, the safety protocols are the same as those for HCW, which are usually controlled by the medical or nursing staff.

Impact on music therapists and music therapy programs in the NICU

In the NICU of Varese, during the first phase of the pandemic (March-May 2020), the NICU music therapy program was transformed into a remote program by connecting with the families through 'Skype' or 'WhatsApp'. The online sessions were held three times per week during the entire hospitalization of the infants. The aims were:

- To support the relationship between parents and preterm infants by creating lullabies, singing for their infant, or play recorded lullabies in the incubator in case the parent was not in the NICU. After discharge, follow-up treatment has been performed online, once time at week, to support parents and preterm babies at home.
- To reduce noise pollution in the incubator and enhance environmental wellbeing through recorded music.
- To provide parent support for processing trauma of preterm birth during the pandemic through composing songs whose lyrics represent the parents' emotional experiences or creating a playlist for parents to listen to.
- To monitor parental stress, anxiety and depression through questionnaires sent by the psychologists via email (Italian version of State-Trait Anxiety Inventory, Beck Depression Inventory, Edinburgh Postnatal Depression Scale, were used).

The music therapist returned in person to the NICU from May 2020 onwards, however safety procedures are very complex and restrictive: clean and sterile gowns, masks, and anti COVID-19 goggles must be worn every day. No specific cleaning protocol has been written for musical instruments used in NICU music therapy in the hospital (ukulele, kalimba, harp, psaltery, and ocean disc). During the pandemic, the instruments were cleaned, following the regular cleaning procedure: clean the instruments with alcohol before and after each individual session. The instruments are kept at the Music Therapy Clinic in the NICU in a sterile cabinet. As of today, it is not possible to provide follow-up in music therapy groups with parents and children, but this service has been replaced by individual follow-up music therapy sessions.

Financial impact

The music therapy program is supported as a freelance contract by the NICU parents' association (TINCONTRO) and the music therapist was paid during the pandemic.

Additionally, the Italian government provided a support of 600 euros per month.

Japan

In Japan, the first case of COVID-19 was confirmed in the middle of January 2020, and afterwards the number of confirmed cases began increasing in the prefectures [15]. The Japanese government requested nationwide school closure on March 2nd. On April 7th, the state of emergency was issued in seven prefectures including Tokyo, which covered all of Japan shortly, to request people to quarantine themselves and to refrain from conducting business and suspension of public events and gatherings [16]. Japan did not conduct a lockdown as of September 2020.

In March, the government and the International Olympic Committee decided to postpone the Tokyo summer games 2020 until 2021 [17]. A few weeks after the declaration was lifted nationwide on May 25th [16], the number of new confirmed cases increased again, and each of the prefectural governments took emergency measurements on its own. Hospitals were overwhelmed due to the shortage of HCWs and medical supplies, securing extra beds in hospitals for patients with severe and moderate symptoms, and securing accommodations or requesting self-quarantine for patients with mild symptoms or asymptomatic patients [15]. As of September 5th 2020, the cumulative number of confirmed cases is 71,419, and the death toll is 1,357 in Japan [15].

Shifts in healthcare in the NICU

Saitama Children's Medical Center (SCMC) located in Saitama prefecture is a tertiary hospital. It cooperatively functions with Saitama Red Cross Hospital that is adjacent to SCMC as a perinatal medical center and cooperates with local medical facilities. The NICU has 30 beds, and the GCU (Growing Care Unit) has 48 beds. The NICU/GCU music therapy program in SCMC started in 2018. In general, music therapy in NICU settings is not yet a familiar concept in Japan.

Restrictions of visitation were implemented in the hospital. One healthy caregiver was allowed to visit for up to two hours each time, and siblings were not able to enter. In the entrance of the hospital, all visitors must disinfect their hands, measure their body temperature, and have COVID-19 screening questions (Appendix A). In the neonatal unit, due to a shortage of PPE, one cloth mask per day was provided to the staff. Explanations of the baby's symptoms and treatment to their parents were held by phone or in a room with the door open, and medical staff wore a face shield. Crossing units and sections was avoided by grouping workers and using partitions. Kangaroo care and parental pre-discharge nursery (parents stay overnight in the unit before their baby is discharged) were suspended.

Impact on the families in the NICU

In May 2020, parental visitation was prohibited unless otherwise specified in the NICU and GCU at SCMC. One parent from the family was asked to make an appointment once a week to bring breastmilk and to have a medical explanation by a doctor about their baby. Nurses video-recorded the baby and stored the video-data in a SD card so that the parents could watch and keep the video at home. In the NICU, a notebook was also shared between parents and nurses to exchange information about their baby. The restriction of parental visitation was lifted in phases from June onwards. As of September, two parents are allowed to visit for an hour with no limitation of visiting times. Their visiting schedules are adjusted by nurses to avoid becoming crowded by families, particularly in the open bay area. Parents must bring a face mask. Some families refrained from going out and visiting their babies because of feeling fear about the infections. The COVID-19 situation might lead parents feeling depressed and isolated and would decrease a sense of control.

Impact on music therapists and music therapy programs in the NICU

The NICU/GCU music therapy program at SCMC continued providing the on-site care temporarily only in the GCU, changing the approaches with precautionous measurements. There are no written cleaning protocols specifically for the musical instruments used for NICU music therapy in the hospital (guitar, ocean disc, and gato box). During the pandemic, the instruments were cleaned, following the regular cleaning procedure; cleaning the instruments with disinfecting wipes and then washing hands with soap and water after every session and before and after the work of the day. The instruments are stored in the same storage as before, which is located on the same floor as the unit of neonatology. When parental visitation was prohibited, the MT offered parents to audio-record their voice with a voice recorder and play it at their baby's bedside in the way the parent could involve in the care. The recorded voice was played when a nurse videotaped their baby so that the parents could watch their baby's responses to the voice on the video later and keep it as a memorial video.

When parents became emotional during audio-recording, the MT provided verbal and/or breathing interventions with social distancing to support the emotional aspect. The information was shared with primary nurses. Individual sessions with the babies were suspended for three months. From July onwards, individual sessions were resumed in phases with restrictions, such as shortening of session time, keeping distance from the baby and/or parents, utilizing humming instead of singing for droplet precautions, and avoiding being crowded with family and staff. Working under the COVID-19 situation, RE personally felt that there seemed to be an impact on developing the therapeutic relationship with the parents, because both the music therapist and the

parents wore face masks and could not see the facial expressions of each other. Environmental Music Therapy (EMT) [18] was continuously provided to support babies, their parents, and the medical staff. For droplet precaution, it was conducted by wearing a face mask and keeping a certain distance from baby beds, and only instruments - mainly the guitar - were used without singing. Improvised music and preferred music by families and staff were played to create a safe and soothing atmosphere and to provide support under the high-stressed situation due to COVID-19.

Financial impact

In SCMC, there is one part-time NICU music therapist who belongs to the department of child life specialist. The salary is paid by the hospital, and there was no financial impact on the program as of September 2020 because of the continuous on-site work of the program. The Japanese government established a one-time grant for HCWs in June, which was equivalent to approximately 480-1,900 USD [15].

Colombia

Colombia reported its first case of COVID-19 on March 6th, 2020. On March 20th, Bogotá, the capital of Colombia with its approximately 8 million inhabitants, entered a quarantine simulation initially lasting for a weekend, but which was actually the starting point for a 6 months lockdown of the country. While specific sectors of the economy (i.e. construction and manufacture) were able to partially reopen their businesses from May onwards, the state of emergency and national quarantine was officially lifted on September 1st. Despite the early lockdown measures and the months-long quarantine, Colombia is one of the world's most affected countries by the pandemic. As of October 17th, the country is ranked #6 in the world with more than 1,000,000 confirmed cases and 28,000 deaths.

Shifts in healthcare in the NICU

Currently, music therapy is offered in the NICUs of three major hospitals in Bogotá, at the hospital 'Centro Policlínico del Olaya' (CPO), at the hospital 'Clínica de la Mujer' (CliMu) and at the hospital 'Fundación Santa Fe de Bogotá' (FSFB). As biosecurity protocols are based on guidelines by the Ministry of Health, all hospitals have implemented strict hand washing policies, the use of hand sanitizers, measuring body temperature, and wearing face masks at all times. HCW including music therapists not directly in contact with COVID-19 patients usually use a N95 face mask with a standard surgical facemask atop and for the music therapist a visor is obligatory.

With respect to keeping up the music therapy services during quarantine, the three hospitals have responded differently to the crisis. At the CPO, the service has been

suspended during the month of April, but has been re-initiated in May. At the FSFB, music therapy has been suspended from May to July, but has been started again from August onwards. At the CliMu, the service is still suspended, with a possible reopening at the end of 2020. Since music therapy has been present nearly continuously (with a month break) at the CPO, the following sections focus on the experiences in this hospital. The NICU of the CPO is a Level III unit with 30 beds and 4 beds in an isolation area exclusively reserved for babies with confirmed or suspected COVID-19 infection. Based on governmental guidelines, specific biosecurity protocols have been adapted and implemented at the NICU with the aim to guarantee the safety of patients, families, and HCWs. Babies are isolated in case the mother has been confirmed positive during a period of 14 days before up to 30 days after birth, but also in case the neonate is hospitalized with a respiratory infection of unknown origin until an infection with COVID-19 is confirmed or ruled out.

Impact on the families in the NICU

Although newborns are a population that have been least affected by the pandemic, any visitor or family member who enters the NICU can potentially be a carrier of the virus. Thus, the new biosecurity standards also led to changes in visiting guidelines. While before the pandemic the NICU of the CPO was an 'open unit' (24 hours visiting policy, grandparents day, siblings day), now only one caregiver from the newborn's family nucleus is allowed to visit the bay in case he/she is not infected. Additionally, family members are instructed to use PPEs such as surgical caps, face masks, isolation gowns, and to comply with mandatory hand washing before and after entering the unit. In case the mother of a newborn in the NICU is suspected or confirmed with COVID-19, both are isolated.

This means that the mother cannot physically visit her newborn baby during the determined time of isolation. However, she is informed about the development and health of her baby via a daily video call and breastfeeding is continued throughout the isolation period. During this time, also other close family members - although asymptomatic - are not permitted to enter the hospital. If the baby is healthy or asymptomatic and once the neonate's COVID-19 infection has been confirmed or ruled out, it can be discharged with a healthy caregiver 'not in close contact with the family' and who is responsible for taking care of the baby. If the baby is symptomatic, s/he remains hospitalized until the end of the quarantine period (10 days).

On the 11th day, every baby can be discharged if otherwise healthy. This separation protocol has led to general discontent in some parents, since it can be challenging to accept or understand that being asymptomatic does not rule out carrying the virus and potentially infect others, including the baby. This is counteracted with continuous education of parents, reducing the time of separation as much as possible,

and continuing breastfeeding throughout the isolation period. The positive side of this strict protocol is no confirmed vertical transmission of the mother to the baby post-partum up-to-date. Along with these shifts in biosecurity measures, also the music therapy service updated the existing cleaning and disinfection protocol (see Appendix B), and implemented social distancing with the patients and their family members of at least one meter.

Impact on music therapists and music therapy programs in the NICU

As outlined in the beginning of this section, the COVID-19 emergency had a profound impact on the music therapy services at all three hospitals. With respect to the CPO, the music therapy team is usually composed of three music therapists, attending patients and families at the NICU, PICU, AICU, maternity ward, and general hospitalization. Due to the pandemic the service has been interrupted during the month of April and reopened gradually its presence at first exclusively in the NICU, and later on at the obstetric ICU (led by one music therapist). From June onwards, the services reopened in the PICU and general hospitalization (led by another music therapist). As of now, each music therapist is still exclusively responsible for each unit in order to limit the crossing over of team members to other units.

While the presence of the music therapist has been re-established relatively quickly, online sessions are carried out contingently in the unit as a way of connecting with family members who have been diagnosed with COVID-19 and thus cannot be present at the unit. Such interventions include the singing of meaningful songs or songs of kin [19] and the use of the participating family members' voices is encouraged. Luckily, due to the low number of infected parents, from May to September, telehealth sessions were only necessary on five occasions. Otherwise, the music therapist continues to work with all methods and techniques, taking into account the biosecurity measures mentioned above.

Financial impact

The COVID-19 pandemic had a strong impact on the financial security of the music therapy program and team members. Since all programs have been exclusively funded by the hospitals or social security companies, during the months of service interruption, payment to the program has been suspended. This means that the team members had to live on their personal savings during these months. With the gradual reopening of the services, the available hours have been distributed equally among the team members in order to provide opportunities to generate a basic income. Currently, the music therapy program at the CPO is back to 100%, and at the FSFB, donations have been collected by the hospital to continue financing the music therapy service from August onwards. The service at the CliMu is still suspended. On October 6th, the Colombian government passed a resolution

for a one-time payment for HCW between 1-4.5 monthly legal minimum salaries, equivalent to approximately USD 220-990 [20].

Discussion

The challenges that the COVID-19 pandemic has caused are evident on many levels of personal and professional life. Hospitals had to change their visiting policies and biosecurity protocols, and many ICUs still remain closed for families and friends of patients. In the NICU, parents have to cope with restrictions in seeing their babies and, if suspected or confirmed with COVID-19, they are frequently separated from them. As it is the case for the music therapy programs in Italy, Japan and Colombia, the music therapists had to change and adapt their procedures and clinical practice (Appendix C). In Italy and Colombia, the on-site services have been suspended during the initial months of the pandemic. However, the pandemic brought also new opportunities in connecting with parents, babies, and staff through telehealth strategies and using mobile applications for online sessions. In all three countries these strategies that have not been used before the pandemic are likely to continue being part of their services also in a post-pandemic reality.

While in critical care environments the safety of patients and staff always comes first, biosecurity protocols have certainly reached a new level. Renowned organizations such as the World Health Organization and the Center for Disease Control and Prevention keep constantly updating the safety guidelines for COVID-19 based on the latest scientific facts and evidence [21-22]. In accordance, also the American Music Therapy Associations put together resources regarding infection control precautions, self-care tips, and suggestions and strategies for telehealth/remote music therapy services [23].

Many HCWs experience physical, mental, and emotional struggles during the pandemic, such as feeling unsafe at their workplace, an increase in workload, physical strains by wearing PPEs, signs of burnout, and keeping social distancing from their own families [24]. While HCWs certainly deserve deep gratitude for their tremendous work, heroism might trigger feelings of sacrifice and pressure [25]. Self-care is therefore paramount for HCWs. One of the authors of this article (BS) stated for example that she had online psychological support to process her own grief for the loss of relatives, friends and colleagues. Besides, her current pregnancy has caused contrary feelings regarding the risks of continuing on-site service for her and her baby and the NICU director's desire to have a music therapist being present in the NICU. RE mentioned that peer supervision, an intensive online music therapy course, and her participation in a conference also became an important part of self-care to strengthen her identity as a music therapist under the

unprecedented situation. ME felt initially overwhelmed by the increase in workload for preparing talks at conferences that had transitioned to an online format. Thus, stressors that may negatively impact the mental health of HCWs including music therapists are diverse and strategies to cope with these situations need to be sought out individually. While the pandemic has led to a global crisis, how people cope with it and how the governmental restrictions are perceived are also based on wider cultural and societal norms. In Japan for example, RE mentioned that in her personal opinion, the wearing of face masks has become a new challenge for both the music therapist and the parents, since facial expressions are not that visible. In Colombia on the contrary, face masks have been obligatory in the NICU long before the pandemic and this was therefore not a new struggle. All three countries, Italy, Japan, and Colombia, are considered to be collective societies, although how this manifests in real life is certainly different in each of the countries. Therefore, even global strategies, such as the use of telehealth need to be considered locally. While for example the use of tablets and internet access is probably a given all over Italy and Japan, there are many regions in Colombia that still do not have internet access and many users cannot even afford a computer. This highlights the need to find individual solutions according to each country, region, and culture as well as hospital policies.

Conclusions

When the authors were writing this article, the pandemic was still happening. The COVID-19 situation demanded many difficult decisions and tough calls both in professional and personal life. It is paramount to pay close attention to the currently active safety guidelines in intensive care, and a development of more solid safe measurements and strategies based on our experiences will be great tools for the next potential disaster. Sharing information about disinfection protocols, the use of telehealth strategies and on-site experiences are important resources for music therapists continuing or beginning their services in the NICU during the COVID-19 pandemic.

While physical health is certainly an urgent need during this crisis, mental health is equally important in the NICU, although just beginning to be addressed [26]. A common aim in all three music therapy programs in Italy, Japan, and Colombia was to support parental mental health and the parent-infant relationship. Especially considering the restrictions for parents to visit their babies, promoting and supporting bonding and attachment between parents and their babies is even more important [27]. Depending on the conditions, telehealth music therapy interventions can play an important role in providing emotional support and trauma-informed care for parents as well as HCWs. This will certainly be needed during and after the pandemic. Continuous

research and further studies are required in medical, mental, public health, economic, and other fields affected by COVID-19 worldwide.

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Biographical Statements

Mark Ettenberger, PhD, MA, MT, is an Ethno-Music therapist trained in Austria and obtained his PhD in Music Therapy from Anglia Ruskin University, UK. He is a RBL (Rhythm, Breath, Lullaby) grandparent and holds a M.A. in Peace Studies and Conflict Resolution from the UNESCO Chair of Philosophy for Peace, University Jaume I, Spain. He currently lives and works in Bogotá, Colombia, where he is the director of SONO – Centro de Musicoterapia (www.sono.la) and a lecturer at the M.A. in Music Therapy at the Universidad Nacional de Colombia. He coordinates the music therapy services at the hospitals Fundación Santa Fe, Clínica de la Mujer, and Centro Policlínico del Olaya.

Barbara Sgobbi, MA, MT, has a Master of Arts in music performance (clarinet) from University Conservatory of Music Varese, and in opera singing from G.Cantelli University Conservatory, Novara. She completed the four-year program in music therapy from the Pro-Civitate Christiana Institute in Assisi, she has completed workshops in the RBL (Rhythm Breath and Lullaby) program and a workshops in the Medical Music Therapy program with Prof. Standley. She is currently the music therapist at the NICU, Obstetrics, and Gynecology department of the Hospital Filippo Del Ponte Asst Sette Laghi Varese, Italy. She was involved in scientific research in perinatal music therapy. Barbara serves as an adjunct music

therapy professor for the Music Therapy Masters program at the Pavia Medicine University, Perinatal Music Therapy program at the Varese Insubria University and for the activity/family workers' program at the Varese Insubria Medicine University. She is the Artistic Director of the C. Saint-Saens Musical Academy - Arts for Disability Therapies and a musician in symphony and wind orchestras in Varese and Lugano (Switzerland).

Rieko Eguchi, MA, MT-BC, CCLS, (grandparent of RBL model) currently works to provide music therapy in the unit of neonatology at Saitama Children's Medical Center in Japan. She holds a M.A. in Music Therapy at Montclair State University, the U.S. She was an intern and research scholar and assisted with various research studies at The Louis Armstrong Center for Music and Medicine in New York, September 2015 - February 2018. She also had a child life clinical internship at the center. Her clinical experiences are various including NICU, pediatrics, outpatient radiation oncology, and palliative care.

Yenny Marcela Beltrán Ardila, Mag. MT, is a music therapist and a nurse graduated from the Universidad Nacional de Colombia and is the co-coordinator of the music therapy service at the Hospital Centro Policlínico del Olaya. In her clinical work she focuses on the Neonatal Intensive Care Unit (NICU) and on the Obstetric High Dependency Unit (OHDU) and her interests cover the maternal-perinatal spectrum including the well-being of parents, infant development, prenatal music therapy and strengthening the parent-infant relationship.

Sergio Adolfo Torres Serrano, MD, is a Medical Surgeon graduated from the Universidad Industrial de Santander (UIS) and a Pediatrician from the Universidad Nacional de Colombia. He holds a specialization in Neonatology and Perinatology from the Universidad Nacional de Colombia and is currently the Medical Director of the Neonatal Intensive Care Unit of the Hospital Centro Policlínico del Olaya and a Neonatologist at the Newborn Unit of the Hospital Marly in Bogotá, Colombia.

Maria Elena Bolis, MS, PhD, has a Degree in Psychology from the University of Padua with a specialization in Clinical Psychology, Psychotherapy, Legal Psychology, Perinatal and Prenatal Psychology and Psychopathology. She is currently the psychologist at the NICU, Obstetrics, and Gynecology department of the Hospital Filippo Del Ponte Asst Sette Laghi Varese, Italy. She has numerous publications to her credit as a scientific researcher in psychopathology.

Massimo Agosti, MD, has a degree in Medicine and Surgery at the Milan University, Specialization in Pediatrics and Neonatology. He is Director of the Neonatology- NICU Department Center as well as Maternal-Child Department of territorial social and healthcare company University Insubria of Varese and ASST-Settelaghi Varese. He gained professional experience first in the pediatrics and neonatology area; promoter of breastfeeding natural and nutrition in the early stage of life in the preterm baby. He is a Professor at the Insubria University of Varese in Medicine and Pediatrics. He has numerous publications to his credit as a scientific researcher.

Appendix A: Health Check Sheet for Outpatients and Visitors, NICU/GCU

*COCOA: COVID-19 Contact-Confirming Application is created by the Ministry of Health, Labor and Welfare of Japan. Extra translations were added to the original sheet.

症状等 Symptoms	患者 Patient		付き添い者 (保護者) Parents		同居家族 Family members
	氏名 Name	カカで記入	父・母・その他: (Father/Mother/Others)	父・母・その他: (Father/Mother/Others)	
発熱 (37.5度以上) (37.5°C or higher) Fever		℃	℃	℃	有・無
鼻水 Runny nose		有・無 (Yes・No)	有・無 (Yes・No)	有・無 (Yes・No)	有・無 (Yes・No)
咳 Cough		有・無	有・無	有・無	有・無
発疹 (皮膚のぶつぶつ) (Raised skin bumps) Skin rash		有・無	有・無	有・無	有・無
下痢 (24時間以内) (In the last 24 hours) Diarrhea		有・無	有・無	有・無	有・無
おう吐 Vomiting		有・無	有・無	有・無	有・無
接触確認アプリ COCOA 「接触有り」通知 (14日以内) COCOA "Exposure" notification (in the last 14days)		有・無	有・無	有・無	有・無

※ COCOA : COVID-19 Contact-Confirming Application

NICU/GCU

Appendix B: Cleaning and Disinfection Protocol Music Therapy Service Centro Policlínico del Olaya

- Considering the biosafety standards of the institution, each service (NICU, PICU, AICU, general hospitalization) has a different set of instruments.
- The Pediatric ICU service has a plastic box that contains most of the instruments. The other instruments are kept in the music therapy office located in Tower 2, fifth floor.
- For the identification and correct use of in each of the units, the instruments that are in the office are marked with a sticker according to each unit.
- For the classification and description of cleaning and disinfection of the items used in the clinical area, the 'Cleaning and Disinfection Manual of CPO DI-0464' is taken as a reference. Musical instruments used in the clinical area are classified as non-critical items.
- Non-critical items: "All those that only come into contact with intact skin, in this case, healthy skin acts as an effective barrier to prevent the entry of most microorganisms and therefore the level of disinfection needs to be lower. In general, it only requires adequate cleaning, drying and disinfection of an intermediate or low level."

Cleaning, disinfection and maintenance of instruments

Cleaning elements	Microfiber cloths, "Deterganio" detergent solution, water, and "Surfanio" disinfectant solution. The solutions are located in the "dirty area" of each service.
Instruments that require cleaning and disinfection	Acoustic guitar, ocean drum, kalimbas, egg shakers, maracas, drumstick, colorful rainstick, wooden rainstick, maracas, drums, speaker, instrument box.
Frequency of cleaning process	Routinary: <ul style="list-style-type: none"> ● Between patient and patient. ● Performed on a daily basis in parts most touched by the patient and the music therapist. Deep cleaning: <ul style="list-style-type: none"> ● The instrument box and other instruments are cleaned and disinfected every eight days.
Description of the cleaning process	Cleaning and disinfection of instruments: <ul style="list-style-type: none"> ● After the session, a pair of gloves will be used and the routine cleaning procedure indicated by the hospital's Cleaning and Disinfection Manual will be performed. ● Use a cloth impregnated with Deterganium ensuring impregnation and remove with water using a different cloth. ● Subsequently, a cloth impregnated with Surfanio is used, ensuring impregnation and not removing. ● When finished, a dry cloth is wiped over the disinfected surfaces. ● Discard the used cloths in the red bin (hazardous waste). ● At the end, perform routine hand washing with soap and water. Cleaning and disinfecting the lunch box: <ul style="list-style-type: none"> ● A pair of gloves will be used and the deep cleaning procedure indicated by the hospital's Cleaning and Disinfection Manual will be performed. ● Use a cloth impregnated with Deterganium ensuring impregnation and remove with water. ● Subsequently, a cloth impregnated with Surfanio is used, ensuring impregnation and not removing. ● Discard the used cloths in the red bin (hazardous waste). ● At the end, perform routine hand washing with soap and water. ● For control purposes, the date record is kept (current date and the next cleaning) with a unit control sticker. ● The team members will rotate for the respective cleaning.
Guitar strings	The change of strings will be done twice during the year and the corresponding record is made.

Appendix C: Changed NICU policies in response to COVID-19 in Italy, Japan, and Colombia (As of September 2020).

	Italy	Japan (GCU/NICU)	Colombia
Changes in music therapy services	The NICU music therapy program, from March to May 2020, was transformed into a remote program by connecting with families through Skype or WhatsApp. The program returned live from May 2020 onwards.	The NICU/GCU music therapy program at SCMC continued providing the on-site care temporarily only in the GCU, changing the approaches with precautions measurements.	Suspended during the month of April 2020, then reopened from May onwards twice a week and from July 2020 onwards three days a week.
Parents/primary caregivers' presence	From March to May 2020, parents could always enter and stay as long as they wanted, but on condition that just one parent entered at a time. After May 2020 the doors of the NICU were reopened to both parents.	Parent visitation was prohibited for a certain period of time. Afterwards, the restriction was lifted in phases. Only one parent was allowed to visit the unit, then visitation hours were prolonged and visitation times increased. Two parents were allowed to enter the unit as of September 2020.	Only one parent allowed to enter the unit.
Parents/primary caregivers' participation in care	No restrictions.	Restricted due to restrictions of visiting hours.	No restrictions.
Encouragement of skin-to-skin care	Yes	Suspended.	Yes
Promotion of breastfeeding	Yes	Restricted due to restrictions of visiting hours.	Yes
Use of mother's own expressed milk	Yes	Same as before.	Yes
Grandparents/Sibling's presence	Suspended.	Same as before. As a regular policy of GCU/NICU at SCMC, only parents are allowed to enter unless there is a valid reason.	Suspended.

Psychological support for parents/primary caregivers	Restricted in remote programs.	Restricted due to restrictions of visiting hours.	Restricted, but not suspended.
Psychological support for health care team	Yes in remote programs.	A mental health team of the hospital provided counseling services with HCWs who were interested during the pandemic.	Does not exist in the NICU.