

Extract from: Philippe Bouteloup, *Des Musiciens et des bébés*,  
Editions Erès, September 2001.  
p. 69-77.

## Musicians and premature babies

*"Nursing staff must strive to provide everything that helps create the best possible bond. In any case, it is vital that both the child and their parents recognise each other, despite the barriers separating them due to the child's illness, in this high risk situation between baby and family."*

Catherine Druon, *A l'écoute du bébé prématuré*.<sup>1</sup>

When we discovered the Mother and Children Protection (PMI) centres in 1979, our main concern at that time was to animate waiting and consulting rooms. We strongly believed in the power of music to connect these children and parents, particularly since the majority were from cultures outside Europe and weren't always fluent in French.

And so we entered the world of the PMI. Over time, we discovered that even children just a few months old not only responded to music, but actively participated in games involving sounds. Their expressions, body and voice language were a set of signs telling us, "I'm listening to you, I can hear you".

Then a doctor pointed out how mothers and children behaved differently when sharing these musical "moments". She was surprised at the ability of these extremely young children to concentrate and how easily they learned the sounds and music<sup>2</sup>. And as a doctor, she added, it helped her better understand the children. Introducing musical actions to this PMI centre had an important effect – it was easier for families to come to the PMI and brought parents and staff closer. And the children were the first to benefit from this increase in trust and confidence.

### From PMI to neonatology

In the neonatology unit headed by Professor Aujard at Robert Debré hospital, Paris, a few years later, we discovered another world – the hospital. Despite having worked for several years with very young children, mainly in child care centres, entering the world of neonatology wasn't easy.

Music shouldn't be seen or used as gadget; it should play a role in the overall care given to the child, and this includes the way he or she is admitted and cared for in the hospital environment.

Intensive care is the priority here. But ensuring the best possible well-being when a baby is finally stable and out of distress is equally as important. "Singing a nursery rhyme or an upbeat piece of music requires special training and listening skills," one nurse told us. "Plus, both the child and adult must be 100% involved in this shared moment."

René Diatkine confirms that music and cultural practices are particularly important in a neonatology unit because, he says, the relationship between mother and child here has often broken down or is fragile due to the forced separation. The aim is to create a "family micro culture", as Tony Lainé describes it, within services for children and parents despite the forced togetherness, the promiscuity,

---

<sup>1</sup> Catherine Druon, *A l'écoute du bébé prématuré, Une vie aux portes de la vie*, Aubier, 1996, p.111.

<sup>2</sup> *A la PMI, je chante aussi* - a cultural and artistic stimulation project carried out at Cité des 4000 de la Courneuve, Edition Enfance et Musique, 1987.

the difficulty of finding time alone, or as a family. "Making sure parents feel at home", as Professor Aujard suggests.

#### The singing voice

Dr Michel Couronne<sup>3</sup>, from Claude-Bernard hospital in Metz, took the first step by suggesting parents record a tape with their favourite music during pregnancy, using their own voice either singing or speaking. This cassette is then played to the baby in the incubator two or three times a day using a specially designed "sonincub" device. Reducing the sense of isolation and absence, as well as reassuring the parents, who feel less absent, the cassette offered a new form of mediation – a "sound umbilical cord".

Together with the nursing staff, we decided to focus on live voice contact. During our first visits to the neonatology unit, we had noticed how machines were omnipresent in the intensive care unit. So we focused on live singing and speaking, rather than substituting a tape recorder – yet another machine, with potential risks if wrongly used (see article on sound noise environment).

#### Songs, nursery rhymes and other games

Entering into contact with a child using light and gentle touches or by tickling and stroking, is a different approach to the sometimes aggressive and painful treatments nursing staff must perform.

For the very young child, the voice and music create a link, a kind of "sound teddy bear" that connects the inside and outside worlds, the home and hospital.

Making music stimulates the imagination, creativity and affectivity. As musicians, it involves emotion and pleasure, play and expression. By combining these aspects, music can play a positive role in a child's development. Parents regain confidence in the abilities of their baby, dare look and let themselves speak to and touch him or her. A mother of triplets, clearly overwhelmed, told us one day, "The only thing I can do for my three children at the same time is sing."

Because art and culture touch us deep down inside, they offer a means of expression, an opening to the world, an opportunity for exchanging, the change to escape. Particularly in a situation where the physical reality of the illness and the care required have taken centre stage.

#### Musician and child, parent and nursing staff

In a hospital centre, the first challenge concerns the content/programme the musician proposes. There is no one-fits-all solution – the contract is constantly being reinvented. For each project, all the participants – children, parents, staff – must invent, reinvent, adapt and explore together.

The second challenge is overcoming any resistance to what some participants might see as a counter-power, or an approach that upsets the status quo. One of the most sensitive areas to handle is the issue of results. Yet these determine the future and development of trials. Assessing the work achieved raises questions over the goals, methods and means provided, helps identify the benefits for staff, children and parents, as well as touching upon any problems that may have occurred. Both regular meetings plus rules and regulations are needed if we want this work to progress.

Training nursing staff in to work with music helps improve the existing cultural potential or gives them skills to exploit it better. By making training a priority, staff can use communication, new ways of thinking and skills to create a world of music for the children and their parents on a daily basis.

---

<sup>3</sup> Couronne Michel, "Un cordon ombilical sonore", *L' éveil musical du tout petit*, Les cahiers du Cenam, N°51, December 1989, p.82-85.

## Music as mediator

Music is an excellent third party mediator, a sharing aid. Music, the “art of participating”, makes for easier communication and facilitates the use of language. It brings individuals together, regardless of age, culture or native language. A musician in a paediatric hospital is not there to play a therapeutic role. It’s not a question of re-education, re-socialising or an occupational activity. Far from wanting to replace the doctors or medicine, the role of these artists is to bring imagination to the hospital and stimulate creativity.

Technical and treatment tasks continue uninterrupted, of course, but why not include a song during bath time, introduce the child to the treatment room with music or sing him or her to sleep with a lullaby? A mother can make contact with her baby again by chanting a nursery rhyme from her own childhood. “I’m so happy to know my baby can hear other sounds than just the beep, beep, beep of the machine. So much can be transmitted through music.”

These kinds of approach help change the attitudes of parents and nursing staff. After all, nursery nurses are often referred to as “mother hens”!

Games/play, the artistic aspect, also influences the opinions of professionals - both of themselves and the child. They are stimulated because they too are playing an active role in enhancing the medical approach to treatment. Treatment and games/play are not always, and by definition, contradictory.

In this hospital context, like elsewhere, the role of the artist, the cultural player/musician, is to offer a different viewpoint, to capture and reveal the sense of play inherent in all participants. And so he or she is instrumental in encouraging changes to everyday habits and ways of behaving.

The nursing staff know that in addition to the treatment they administer, singing meets the child’s basic and vital need for affection. Parents regain confidence, the music strengthens bonds, flowing seamlessly between the home and hospital. Some discover that their child can already hear and is extremely receptive to the rhythms, intonations and melodies of their voices, that he or she is capable of reacting. Others find making voice contact with their child particularly reassuring after the trauma of their transfer to a neonatology centre.

The relationship, based on expression, restores a vital sense of being to participants. It sometimes preserves, and almost always strengthens, the feeling of existing when the integrity of the child is threatened by illness.

Both premature and new-born babies are “individuals”, and as such, benefit greatly from the stronger parental bond and sharing of sensory experiences in this new space devoted to art and cultural expression.



Musique & Santé  
4, passage de la Main d’Or  
F- 75011 Paris  
Director: Philippe Bouteloup  
☎ +33 (0)1.55.28.81.00  
e-mail: [info@musique-sante.org](mailto:info@musique-sante.org)  
[www.musique-sante.org](http://www.musique-sante.org)

Extract from: Philippe Bouteloup, *Des Musiciens et des bébés*,  
Editions Erès, September 2001.  
p.70-77.

## Sound environment and music in neonatology

*"To listen to insects*

*To listen to human beings we don't wear  
the same ears."*

Wafù<sup>4</sup>

The world of sound in a hospital centre comes as a surprise. It alternates between silence and uncomfortable noise. For the general public, the word hospital means calm, rest, and therefore silence. But if you listen more carefully, it is actually an incredibly noisy place – alarms and bells, all kinds of buzzer, interphones, radio-cassettes.... Indeed, in some areas, the quantity and intensity of the mixed sounds could even be described as a cacophony.

R. Murray Schafer<sup>5</sup> defines noise as unpleasant, strong, disturbing and non-musical sounds. Apart from the sound intensity, all the other aspects are subjective.

All human activities involve sounds, but stress in certain hospital services make them even noisier. Noise, in any profession, is a vital piece of information. It reassures the child because it conveys a presence. It becomes uncomfortable when unwelcome and out of control.

Sound environment in an intensive care unit

In the neonatology unit at Robert Debré, like in most services, the sound environment comprises many different sounds. Today, nursing staff are surrounded by increasingly sophisticated machines that involve sounds (humming, buzzing, beeps and alarms...). The array of devices in an intensive care unit includes cardiac and respiratory scopes, syringe pump, oxymeter, Hood ... plus telephones and printers, to mention but a few.

Of course every piece of medical equipment has an alarm, a mechanical "lookout". And on first visiting the service, I was surprised to discover so many different types. Intensities, pitches, colours to distinguish the sounds, trigger frequencies ... all coming from everywhere ... a musician is naturally troubled by such stimuli. Because of the stress they generate and the many distress signals they seem to be sending. A child is hardly likely to be able to cope with such an aggressive onslaught. How can parents visiting the service to see their child possibly feel at home in such an alien and disturbed environment?

Of course an alarm signals danger, but I was shocked to learn that nursing staff responded differently to different alarms because each one represented an alert level.

So the nursing staff were fine-tuned to distinguish between the buzzing of a syringe pump, a cardiac scope or an oxymeter.

---

<sup>4</sup> Wafù, in Maurice Coyaud, *Fourmis sans ombre, Le livre du haïku*, Phébus, 1978, p.18.

<sup>5</sup> R. Murray Schafer, *Le paysage sonore*, Ed. J.C. Lattès, 1991.

## Remarks

Nursing staff became more conscious of their working environment after watching a video filmed about and in the service itself. Each member realized the intensity of the sound environment they worked in and how they had unfortunately become oblivious to it. In the next step, a technician took a sound check in the service, focusing on the incubator: this helped us better understand and improve this environment.

Two distinct sounds were detected – human activities and the machines. First surprise: the sounds we had previously thought aggressive for the child are less so when heard from inside the incubator, which acts as a protective sound barrier. Second surprise: the sounds we had thought less aggressive, like a musical box or sound toy, turned nasty when played inside the incubator.

## Sound ecology

The sound ecology of a service first involves raising awareness and identifying all the sound sources, both from machines or linked to human activities. Listing and locating these sounds, adjusting the machines better, sometimes even contacting the manufacturers so they can take these factors into consideration at the drawing board stage, adapting alarms to the illness of the child, the minima-maxima levels of scopes – all these tasks are feasible.

Altering the behaviour of staff is more difficult. Stress, fatigue, habits ... this problem can only be addressed and resolved through teamwork.

However, special attention can be paid to certain gestures: slamming drawers, closing incubator flaps too violently, staff calling out to each other, devices placed on top of the incubator. Every time an object is placed in contact with an incubator, the latter becomes a sound box. For example, the intensity of an incubator flap closing can reach as high as 100 decibels; if a child screams or cries, the level can reach 85 to 100 decibels. The incubator reflects and amplifies the slightest impact on any of its sides. A report sheet filled in or a pair of scissors set on top of the Perspex can trigger a sound storm inside the incubator. The heat probe alarm is the worst culprit, with a high-pitched frequency that is difficult to locate within the service (e.g. a room with several incubators or a series of boxes), plus, and most importantly, because it is located inside the incubator it is extremely violent for the child.

In response to the above, constant care must be taken to monitor machines to ensure they are working correctly and are properly programmed.

In 1999, a musician and nursing staff at Hôpital des Enfants de Toulouse took samples of sounds inside incubators using two microphones – one pointing towards the middle of the room; the other towards the inside of the incubator (empty), level with where the baby's head lies. The recording machine used was a DAT digital recorder. A sonometer measured the sound levels - in decibels (dB) from 0 to 130 (maximum level that can be tolerated). A calm atmosphere registers between 30 and 40dB (e.g. in the countryside); a noisy street about 60dB; clapping your hands hard reaches 100dB; a jet plan taking off hits 130dB. Incidentally, recent regulations now limit the sound level for public concerts to 105dB.

Findings from this project in Toulouse confirmed our observations in the neonatology service at Robert Debré, namely:

- inside the incubator, the low frequency noise (20 to 100Hz) is emitted by the breathing apparatus. The external noise levels in the higher frequencies are lessened, particularly for the temperature sensor (2.5KHz) alarm. The incubator acts like a sound box and amplifies frequencies around 100Hz, low notes from a guitar (100Hz) resonate with an incubator,

- all impacts and contact with the incubator, including closing its flaps, which may appear insignificant at first, reach levels of up to 100dB inside. When a tray is placed on top, padding considerably diminishes the impact.<sup>6</sup>

If tomorrow, a manufacturer of incubators took into account these findings during the design phase, both the children and their entourage would greatly benefit.

### Background music

In a children's service at a hospital, recorded music creates a "family atmosphere" for the parents and children, a means maintaining contact with the outside world. The nursing staff can ask the parents to select the music and so give them a role to play. The music also enables the child to exist as an "individual", not just a medical case. However, these "human" benefits also raise issues:

- who chooses the music, when and how long should it be played?

- is it possible to meet the different tastes and cultures of staff and patients? Selections are bound to please some and annoy others.

The background music must also avoid becoming overbearing and shouldn't engulf the sounds of everyday life. An overloaded sound environment risks generating further stress and aggression. If the tape recorder is used systematically, as we have observed in certain services, there is a danger it may become a substitute for live human contact.

The goal is not to achieve total silence, synonymous with emptiness, which would recreate the infamous "Silent Hospital". Rather we need to identify which noises we want and don't want, which sounds we would like to keep or encourage. Our experience of musicians working in such services, in close contact with staff, like at Professeur Aujard's neonatology unit at Robert Debré, has revealed the power of music-based training to raise awareness and alter the environment. Music will always be a collective experience, played for and with others. Rather than submit to noise aggression, why not use it to improve our listening skills and show greater respect for each other!



Musique & Santé  
4, passage de la Main d'Or  
F- 75011 Paris  
Director: Philippe Bouteloup  
☎ +33 (0)1.55.28.81.00  
e-mail: [info@musique-sante.org](mailto:info@musique-sante.org)  
[www.musique-sante.org](http://www.musique-sante.org)

---

<sup>6</sup> Marie-Françoise Mory, "Musique et environnement sonore en réanimation néonatal", *Musique à l'hôpital, Des artistes à l'hôpital*, colloque cité de la musique/ Musique et Santé, October 1999, p. 30-31.