## What is the impact of a Neurologic Music Therapy service on an inpatient acute Stroke Unit?

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### INTRODUCTION/BRIEF DESCRIPTION

The UK Stroke pathway has been well developed since the introduction of the National Stroke Strategy in 2007 (Department of Health, 2007). Included in current National Clinical Guidelines for Stroke (Intercollegiate Stroke Working Party, 2016) are recommendations that patients have access to a range of Allied Health Professions (AHPs) including Physiotherapy, Occupational Therapy, Speech and Language Therapy and Dietetics. Music Therapy is an AHP that has less presence within the current stroke pathway. Music therapists use music to help their patients achieve therapeutic goals through the development of the musical and therapeutic relationship (British Association for Music Therapy, 2020). Neurologic Music Therapy (NMT) is a neuroscientific model made up of standardised clinical techniques and provides evidence and outcomes to demonstrate its positive impact in patients with neurological impairment in domains such as physical rehabilitation, cognition, speech and communication (Magee, Clark, Tamplin, & Bradt, 2017; Thaut, McIntosh, & Hoemberg, 2015; Thaut & Volker, 2014). In line with the national guidelines for Stroke rehabilitation (NICE, 2013), the NMT intervention targets specific patient rehabilitation goals integrating a multi-disciplinary approach to therapy. More generally, this approach also focuses on patient emotional well-being and psychological needs (NICE, 2013).

The following is an example of how an NMT pilot on an acute NHS stroke unit, which ran in 2015, led to an ongoing service as part of the unit's multidisciplinary team. The service demonstrates how music therapy as an Allied Health Profession, can contribute to the National Clinical Guidelines for Stroke Recommendations (2016) suggesting 45 minutes every day of 'each appropriate therapy', through joint-working and goal-setting (p. xiv).

### Context and Aims

Recent research has identified that research advancements into stroke rehabilitation (principally cognitive and physical rehab), could significantly reduce costs of care in the public realm (Stroke Association, 2017). Studies such as this, therefore, add significant value, not only improving quality of life for stroke survivors but offering cost effective, sustainable treatment at acute stages of care.

In 2015, Chiltern Music Therapy was funded by the Buckinghamshire NHS Charitable Trust to provide a pilot NMT service on Wycombe General Hospital's acute stroke unit.

The aims of the pilot project were:

1. To explore accessible provision for further Neurologic Music Therapy on the ward
2. To fit in with general hospital aims of
    - developing their stroke services to patients
    - providing the highest level of rehabilitation care to patients through specialist provisions centred around the patients' care needs
    - developing the skills of the dedicated workforce

### METHOD

The music therapy pilot ran for a total of 12 weeks, with one Neurologic Music Therapy practitioner providing a service one day a week. The Speech and Language team manager acted as the liaison between Chiltern Music Therapy and the hospital therapy team, which included speech and language therapy, occupational therapy and physiotherapy. The service was set up on a referral basis, with a member of the therapy team referring patients dependent on patients' needs

and goals. The MDT used morning handover to refer patients to either individual or group NMT. The MDT member and the Music Therapist set session goals using the Goal Attainment Scale (GAS) measurement tool and planned which NMT techniques would be used with the patient in line with the MDT therapy goals. Music therapy sessions were all held with the MDT member who referred the patient. Following the session, a debrief was carried out, during which any assessment tools would be completed and the GAS outcome tool used to generate a score for goal achievement. Patient notes were jointly written.

Outcomes to explore how music therapy would fit in with the wider team and the needs of the patients included keeping a detailed log of patient referrals, gathering details on who referrals were made by and why patients were referred.

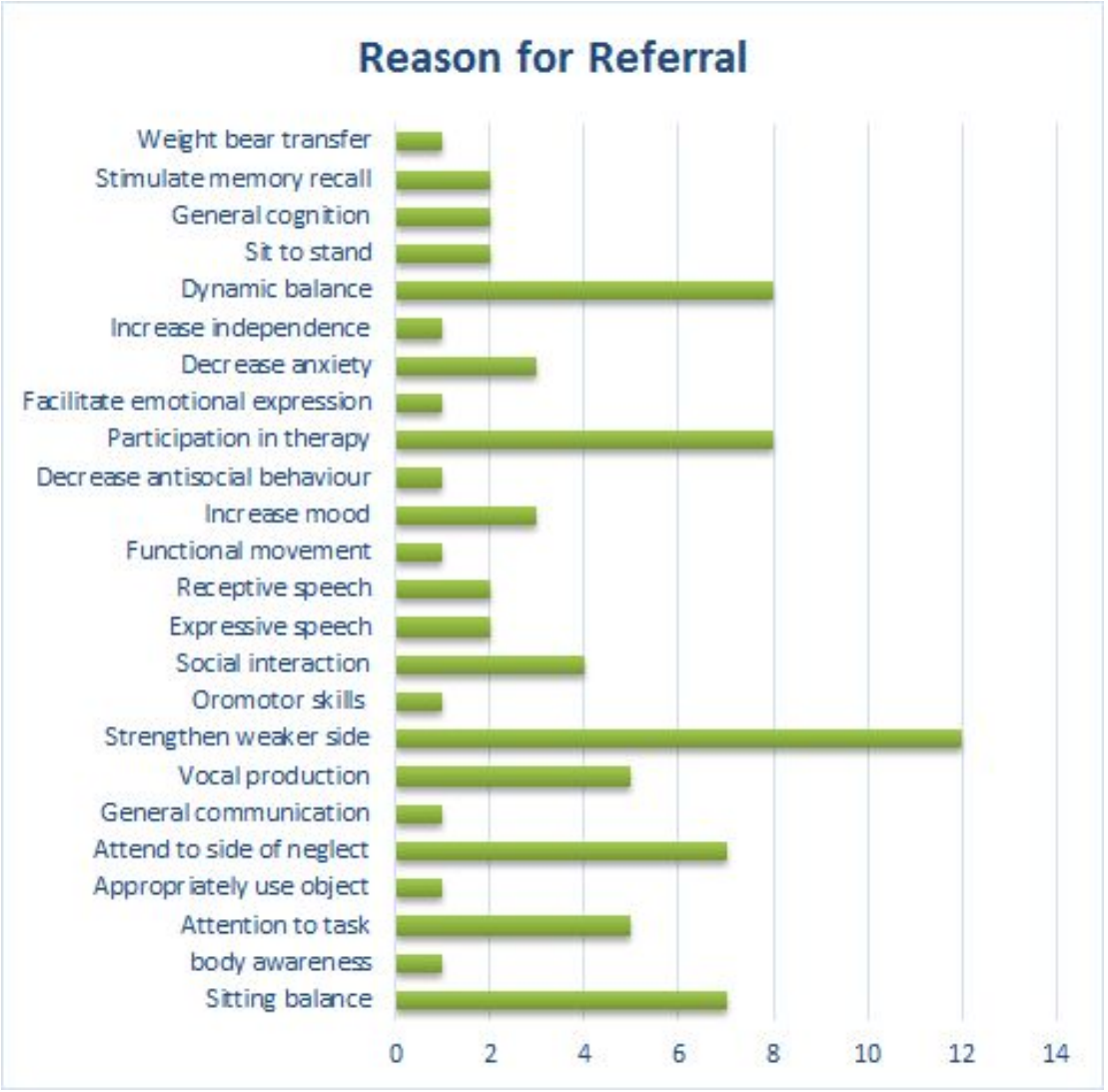
In order to explore the impact on meeting a patient's individual goals, carryover from musical exercises to non-musical exercises at the end of each session were documented. This data was gathered by providing staff with feedback forms (see appendix 1), which included documenting their observations of patient behaviour/performance in therapy and goal attainment, as well as any additional comments about the session. Patients were asked to score their satisfaction level at the end of the session using a visual scale consisting of high visibility animated facial expressions. Mood and anxiety levels were measured at the beginning and end of the session to ascertain Depression Intensity Scale Circles (DISCs) and Anxiety Scale Circles (ASCs) scores. Patients were asked if they would opt to come to music therapy again and to give verbal feedback if appropriate. Patient experience was then collated into quantitative data (satisfaction score, DISC scores) and qualitative data (verbal feedback).

## **RESULTS/OUTCOMES:**

1. Referrals

18 patients either received group or individual NMT over the twelve-week period, with 3-4 sessions occurring on the allocated one-day service per week. Each session lasted approximately 45 minutes, depending on the needs of the patients.

Across the pilot, referrals were roughly equal among the three referring groups, with 32% of referrals coming from Occupational Therapy, 32% from Speech and Language Therapy and 36% from Physiotherapy. Reasons for referral from each discipline can be seen in the following charts below. The varied reasons for referral from each of the Allied Health Professions indicate an understanding that the music therapy service could be utilised to work on the functional goals of the patients in the areas of communication (for example apraxia and aphasia), cognition (i.e. attention and neglect) and physical function (i.e. upper body strength and standing balance). A portion of referrals also noted the inclusion of music therapy sessions for motivation in movement, with the underlying assumption that music may provide an impetus for movement or engagement in therapy.


Reason for Referral
Weight bear transfer
Stimulate memory recall
General cognition
Sit to stand
Dynamic balance
Increase independence
Decrease anxiety
Facilitate emotional expression
Participation in therapy
Decrease antisocial behaviour
Increase mood
Functional movement
Receptive speech
Expressive speech
Social interaction
Oromotor skills
Strengthen weaker side
Vocal production
General communication
Attend to side of neglect
Appropriately use object
Attention to task
body awareness
Sitting balance
0
2
4
6
8
10
12
14

2. Goal Achievement and Carryover

A total of twenty-one written observations were collected by occupational therapy, speech and language therapy and physiotherapy in relation to patients' responses to music therapy sessions as well as their goal achievement.

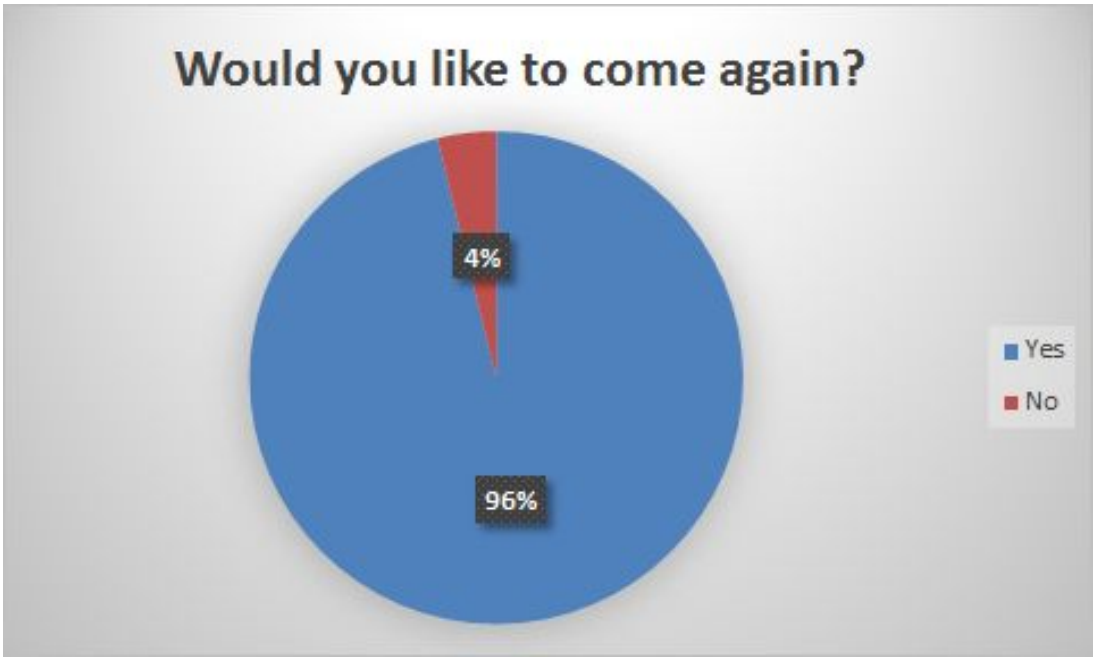
Upon reviewing the content, a number of themes arise. These are engagement, music and motor skills, communication and mood.

*2.1 Engagement*

An overarching positive outcome of the project saw a high level of engagement observed across the participant group in all disciplines. Specifically, engagement and attention was markedly higher in comparison to other previous therapy interventions (Physio, SALT, OT). In some cases, a higher level of engagement was seen in relation to previous therapy sessions. For example,

> "patient engaged in music therapy very well, demonstrated ability to use her left and to the rhythm of the beat. Patient previously has disengaged/got sleepy when using her left hand in activities such as cards. Dominoes." (OT)
>
> "This particular patient has been struggling to access traditional therapy. In this session he exceeded his goal" (OT)
>
> "It has encouraged patients to join in when other techniques have failed". (OT)
>
> "significantly improved sustained attention to task and patient's ability to engage in the task" (OT)

Patients were asked if they would like to come again. Of those asked,



*2.2 Music and Motor Skills*

The notion of music acting as an impetus for movement was noted in terms of rehabilitation in the both upper and lower limbs.

- "Initially requiring increased prompts to follow tasks and to attend to left side but with music was able to start following the task independently. Increased bilateral integration of upper limb when initially not engaging his left arm" (OT)
- We have been struggling with this patient and they are highly distractible. The minute the music started the patient moved to the rhythm and he walked across the gym with a significantly improved gait pattern. (PT)
- The sessions definitely made a difference to the patient's use of left hand. Although prompts were needed on some activities the rhythm encouraged the patient to use her left hand. (OT)

*2.3 Communication*

Goals met in the area of speech and communication were also described including automatic speech and fluency.

- "The patients I have been with have enjoyed the sessions, but we have also seen positive effects on their participation/attention/communication e.g. vocalizing/automatic speech" (SLT)
- The patient was able to make verbal choices with songs which he is struggling with previously) making choices) (SLT)
- Able to sing when talking is difficult due to dysfluency" (SLT)

*2.4 Mood*

While mood was not listed as a reason for referral, the particularly positive response in terms of patient's mood was described by staff. The effect of stroke on mood, including depression and anxiety has been documented (Robinson and Jorge 2016, Burton et al 2013) and the NICE (2016) Guidelines for Stroke include recommendations for psychological care. Staff responses in terms of mood included the following:

- The session had a positive impact on mood – patient was engaged, participated and attended'
- We saw the patient at bedside and patients in the bay commented positively about the music- lifted the move. Other patients keen to join in/have future sessions.'"
- Patients were engaging in session and with music therapist, it improved mood and motivation.

In addition, the responses to the DISCs showed a mean average change across participants from 3.4, "Fine" to 1.9, "Great" between the start and end of sessions.


Note: A lower score shows improvement in mood.

*2.5 Additional outcomes*

Staff responses also described taking on techniques used in music therapy and carrying on with these between sessions. This points to the aim of developing workforce skills, in this case through the use of shared practice.

- "We have been able to use the singing in our session which has been very helpful" (SLT)
- "SALT to compile list of favourite music and also use song in their SaLT sessions" (SLT)
- "We will continue to use the techniques to ensure generalization" (PT)
- "Patient was motivated by music; going to use in other therapy rehabilitation" (PT)

Word cloud showing some of the qualitative comments and data gathered in responses:


In summary, staff perception concluded that music therapy provided focus and motivation to help achieve goals across a range of areas including physical/ motor, cognition, speech and communication, and emotional wellbeing. Feedback gathered from the project suggests that Neurologic Music Therapy, alongside other AHP's and approaches, has the ability to positively impact on outcomes for stroke patients.

In 2017 The Stroke Association published projected costs of stroke over the next 20 years on The NHS, social care, informal care and lost productivity. Within this report they identified that research into 5 key areas, including cognitive and physical rehabilitation, would have a significant reduction on the financial burden of cost. In their 2019-2024 research strategy they identified one of their key goals as funding research into effective new ways to support stroke survivors and their families after stroke. It is hoped pilots such as this can contribute to the wide body of research

within stroke rehabilitation and contribute to reducing financial burden and improving quality of life for stroke survivors.

**LEARNING POINTS:**

Upon completion of the pilot, a number of recommendations followed. First, the full day service was recommended to include the creation and handover of music therapy Home Programmes with staff and family members in order to enable patients to continue and maintain their rehabilitation once they have been discharged from the Stroke Unit. This was also important for carryover between sessions when the music therapist was not present.

It was also recommended that the Music Therapist attends team or department meetings as well as links in closely with one key member of staff within each therapy team: Speech and Language, Occupational Therapy and Physiotherapy, to ensure that the referral system is managed and implemented as effectively as possible.

Finally, further music therapy service pilots on stroke units would benefit from a standardised outcome to use alongside qualitative feedback in order to quantify outcomes, or to be included where standardised measures are used.

As well as providing services in Neurologic Music Therapy for patients, an innovative program led by CMT, entitled the iPod Pharmacy has also been implemented on the ward (as well as in other services provided by the organisation). The iPod Pharmacy is an initiative which takes unwanted MP3 players, cleans and loads them with a selection of tailored music to help stimulate, soothe and engage patients. For this particular patient population, research has suggested that music listening may improve mood for patients in the acute stages of stroke (Särkämö et al., 2008).

The pilot was mentioned in the Royal College of Physicians quarterly Sentinel Stroke National Audit Programme (SSNAP), where it gave the Stroke service an 'A' overall rating – placing it among the top 7% of stroke services in England, Wales and Northern Ireland. The music therapy service on the unit continues to evaluate and present its progress and challenges across nationwide platforms such as the Live Music Now conference at the Royal Society of Medicine in 2015, and the UK Stroke Forum Conferences in 2017 and 2018.

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APPENDIX 1. STAFF FEEDBACK SHEET

Music Therapy Feedback

| | |
|---|---|
| Why did you refer your patient for MT | |
| What aims did you have for your patient and were they met | |
| Do you think the MT service should continue – why? | |
| What improvements could be made to the MT service? | |

APPENDIX 2. AUDIT SHEET

Buckinghamshire Healthcare NHS
NHS Trust

## Referral/Audit Record
## Chiltern Music Therapy

**Admission Date:**
**Diagnosis:**

**Hand Dominance [R] [L]**
**Affected Side [R] [L]**

**Date of Referral:**
**Vision:**
Glasses [ YES] [NO]
Heminopia:[R] [L]
**Hearing:** Aids?

**Current Physical Status**

i.e Walking: -Sitting Balance: Transfer Standing Balance: Current diet / fluids:

**Current Communication**
[Expressive] [Receptive] [Dysarthria] **Comments:**----------

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**Current Cognitive skills:**
**Following Directions**: Independently [ ] Hand over Hand Guidance [ ] Physical prompt [ ] Verbal prompt [ ] Both [ ]
**Inattention / Neglect: [**Left] [Right]
**Memory:** Immediate Recall [ ] Delayed Recall [ ] Long term Recall [ ] Other: ----------
**Attention to task:** Focused [ ] Sustained [ ] Divided [ ] Selective [ ]

**Comments:**----------

**Current Phsychological Status**

**History of Depression and/or Anxiety: [YES] [NO]** ----------

**Mood:** Recent ASC/DISC Scores **Date:**----------

**Behaviour:** ----------i.e Impulsivity, Agression etc

**Reason for Referral:** **CIRCLE KEY AREAS: [COMMUNICATION] [BEHAVIOUR] [PHYSICAL] [COGNITIVE]**

Include any relevant /current goals you have set.

**Would this person be suitable for [Group] [Individual] sessions. OR [Both]**

**The following section to be completed by Music therapist /Key Therapist:**

| **Date(s) of sessions attended** | **Goals set during session(s)** |
|---|---|
| | |

**Music Therapy Techniques Used**

**Physical**
RAS [ ]
*Cadence:*_____ *Velocity*:_____Stride Length:_____
TIMP [ ] *Metronome Marking [ ]*
PSE [ ]*Metronome Marking [ ]*

Other:_____
_____
_____

**Speech**
MIT [ ] MUSTIM [ ] VIT [ ] TS [ ]
OMREX [ ] SYCOM [ ]
RSC[ ] *Metronome Marking* [ ]

Other:_____
_____
_____
_____

**Cognition**
MMT [ ] MSOT [ ] MNT [ ]
APT [ ] MACT [ ] AMMT [ ]
MEFT [ ]

Other;_____
_____
_____

**Emotional Well-Being**
Music Assisted Relaxation [ ] Song writing [ ] Music Listening [ ] Lyric Analysis [ ]
Improvisation [ ]

Other:_____
_____
_____
___

**Instruments:**

Keyboard [ ] Guitar [ ] Percussion { ] ***Specify:*** _____
_____
***Other [ ]*** ***Specify:***_____
_____
Placement of instruments [N/A]
_____
_____

**Repertoire**

## Chiltern Music Therapy Assessment
## OUTCOME MEASURES RECORD

Buckinghamshire Healthcare NHS
NHS Trust

**Date:**

**Goals Achieved were at : [ ]**

**Much Better** outcome this is scored at: +2
**Better than expected** outcome this is scored at: +1
**Expected level** outcome this is scored at: 0
**Worse than expected** outcome this is scored at: -1
**Much worse than expected** outcome this is scored at: -2

**Verbal feedback from Client:** ----------

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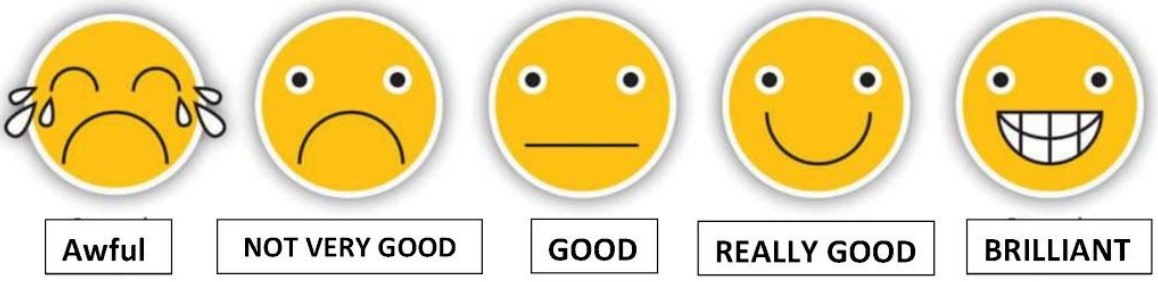
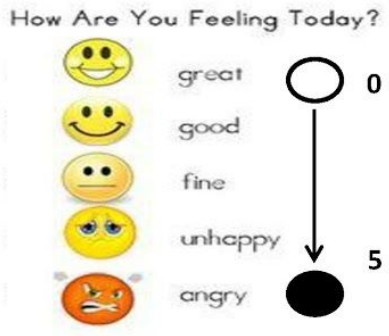
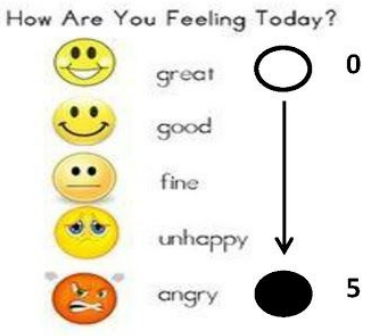
**Satisfaction Post session:**
**How helpful or enjoying has this session been to you today?**




**Feeling Before Session: ASC & DISC**




**Feeling After session: ASC & DISC**




**Would you like to come again?** [Yes] [No] Why:----------

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**Therapist Printed Name:** **Signature:** **Designation:** **Date**