

# Evaluating Prescribing of Melatonin in Paediatric Patients With the aim of Improving Identified Weaknesses in a Large Teaching Hospital

Author: James Scott, Supervisor: Natalie Cunningham

## What is Melatonin?

Also called the “sleep hormone”, melatonin regulates circadian rhythm and can help promote sleep initiation<sup>1</sup>. It sees considerable use in paediatrics for sleep disturbance or delayed sleep onset when **non-pharmacological** methods have failed<sup>2</sup>. Melatonin liquid is the third most produced special in the UK<sup>3</sup>.

## Methodology

A report of the 50 patients who received Melatonin in September 2020 was generated using Ascribe© (pharmacy system) and their notes were reviewed using Evolve© (electronic notes software) to collate the following information:

- Patient demographics
- Indication
- Formulation
- Dose
- Amount supplied
- Cost
- Monitoring
- Primary diagnosis
- Swallowing capabilities
- Whether Circadin© was trialled (If on liquid).
- Suitability of transferring care through Shared Care Agreement

## Formulations available in the Trust

Melatonin 2mg Modified Release tablets (Circadin®)	<ul style="list-style-type: none"> <li>• First line</li> <li>• Used “Off-label” in paediatrics.</li> <li>• Crushable (unlicensed use)</li> </ul>
Melatonin 1mg and 5mg Prolonged Release tablets (Slenyto®)	<ul style="list-style-type: none"> <li>• Alternative first line</li> <li>• Only for licensed indications</li> <li>• Introduced after this research was completed</li> </ul>
Melatonin 5mg/5mL oral solution	<ul style="list-style-type: none"> <li>• Second line, <u>only</u> if crushing tablets inappropriate (e.g. administration via enteral tube)<sup>4</sup></li> <li>• Unlicensed product</li> </ul>

## Aims

1. Identify if Circadin is being prescribed first line over melatonin liquid.
2. In March 2020, a Shared Care Agreement (SCA) was established between the hospital and the neighbouring Clinical Commissioning Group. Aim to find if it was being used to full extent.
3. To evaluate overall prescribing practises

## Results

If the 49 eligible patients were managed within the community via the SCA, the hospital would reduce prescribing costs by **£25,002.50** annually. Additionally, this would make collection of prescriptions more convenient for patients.

**78%** of patients were prescribed the liquid formulation and **95%** of those patients were initiated immediately without trialling Circadin© (fig. 1). This did not follow the guidance set out in the SCA and increased annual drug costs for the hospital by **£4296.96**. The two areas for intervention were: Prescribing Circadin© first line, and transferring patients to the SCA. Other areas investigated showed mostly appropriate prescribing, particularly when concerned with primary diagnosis and regular reviews/monitoring.

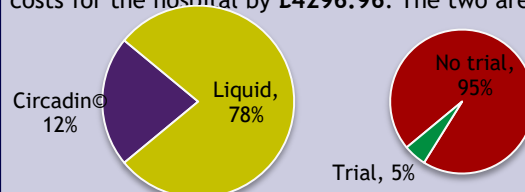


Figure 1 - Charts showing percentage of patients prescribed liquid vs Circadin© and percentage of patients who trialled Circadin© before initiating

## Actions

A prescribing guideline was produced outlining the process of initiating, monitoring and adjusting newly-prescribed melatonin to meet the requirements for the SCA. Prescribing Circadin© first-line was emphasised to prompt prescribers. This guideline has been updated to feature the new guidance regarding Slenyto© and how it fits into the overall treatment pathway. Additionally, Plans are arranged to provide melatonin teaching for consultants to encourage good prescribing practises.

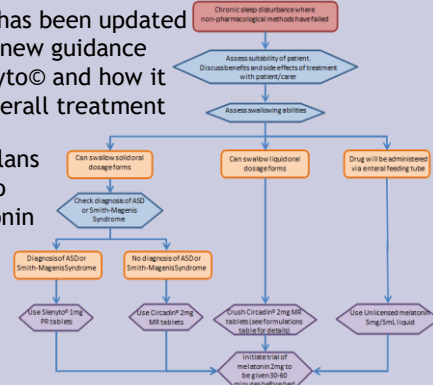


Figure 2 - Extract of flowchart present in prescribing guideline

## Conclusion

Prescribers of melatonin often do not initiate Circadin© first-line. A prescribing guideline and contact with prescribers intends to positively influence prescribing practises in the hospital and increase the number of patients taking Circadin© and transferred to the SCA. The data obtained was a snapshot of one month and data may vary. The project could be extended by reviewing a year of prescribing.

## In Future

Due to long-term prescriptions, a measurable effect of the prescribing guideline will take time as patients may wait **6 months** for their next review. This is beyond the timescale of this project but a sample could be taken in September 2021 to compare with the previous data set.

1)Tordjman S., Chokron S., Delorme R., Charrier A. Bellissant, E., Jaafari, N. and Fougerou, C., 2017. Melatonin: Pharmacology, Functions and Therapeutic Benefits. *Current Neuropharmacology*, 15(3), pg434-443.  
 2)Paediatric Formulary Committee. British National Formulary for Children [Internet]. London: *BMF Group, Pharmaceutical Press, RCPCH Publication*; <https://bnfc.nice.org.uk/drug/melatonin.html> [03/03/2021]  
 3)NHS Business Services Authority. Volume and Cost of Special Order Products [Internet]. *Department of Health and Social Care*; <https://www.nhsbsa.nhs.uk/prescription-data/> [03/03/2021]  
 4)CD&T Area Prescribing Committee. Shared Care Guideline for Melatonin. [Internet] *North of England Commissioning Support Unit*, (2020); <https://medicines.necsu.nhs.uk/guidelines/tees-guidelines/> [03/03/2021]