

# A Report regarding Play Preparation Development for EEG Recording

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## 1. Introduction

Our hospital is a pediatric specialized hospital consisting of six wards in total: two wards of internal medicine, two wards of surgery, a psychiatric ward and ICU. Approximately 400 children visit our hospital as outpatients on a daily basis and they visit one or few department(s) out of 27. There are five children's nurses who implement play preparations by using everyday play. Three out of five of those children nurses had taken an HPS training program at University Shizuoka Junior College and obtained the certificate from the university (hereinafter referred to as HPS).

In August 2013, a pediatric psychiatrist was requesting HPS for a play preparation during the electroencephalogram (EEG) recording for a young male who had an emotional problem. Accordingly, HPS developed a specific play preparation especially for children who suffer from emotional disorders and developmental impairments.

## 2. Objectives

Children who suffer from psychiatric disorders including emotional disorders and developmental impairments are prone to panic and/or get extremely nervous when they encounter an event that they have never experienced before. Consequently it can be difficult to apply medical examinations and treatments to children with such conditions. To reduce children's fear and misunderstanding of medical examinations, HPS used a model EEG and a doll. This article also reports the measurement and comparison of brain waves at the onset of sleep and when awaking during EEG recording.

## 3. Method

- 1) Subjects: Children who suffer from psychiatric disorders including emotional disorders and developmental impairments
- 2) Creation of a play preparation booklet



### Image. Play Preparation Booklet

- 3) Practice model of play preparation: The explanation is given by using personal computer (hereinafter referred to as PC)
- (1) Explanation of the procedure of pre-examination (administration of a sedative agent or a suppository)
  - (2) Introduction of attending laboratory technicians and of the examination room
  - (3) Explanation of the procedure of the examination by using a doll (60cm) which has electrodes on its scalp [See images below]



- (4) Explanation that the subject can watch DVDs and games while waiting until all electrodes are attached to his/her scalp (for approximately 10 -15 minutes)
- (5) Explanation of situations when the subject falls asleep and when he/she wakes by showing images of a light stimulus test
- (6) Explanation of how to remove electrodes after the completion of the examination

### 4) Introduction of a play preparation



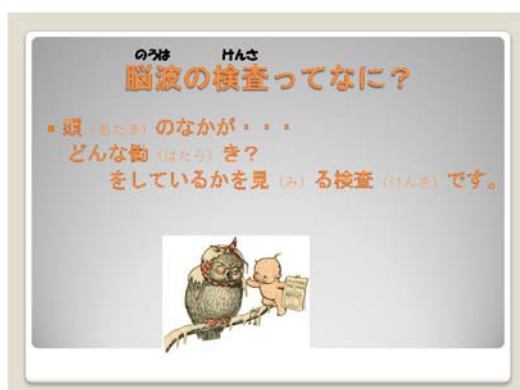
#### Preparation for EEG recording

For toddlers ~ grade 2

By Children Nurses and HPS

Child life section, General Pediatrics

Aichi Children's Health and Medical Center



#### What is EEG?

This is a test

to check the inside of your head

and to see how it is working



Before the examination

Take a pill to make you feel sleepy

-a medicine to take by mouth

-a pill to insert into your bottom



Here is the examination room

1) The explanation of sedative medicine and suppository

The child is transferred to the examination room after having taken sedative medicine or suppository



Here is the inside of the room

2) Introduction of the examination room

To let a child see the image of the room and how dark it can be

けんさ ぎし しょうかい  
検査技士さん紹介。



- 3) Introduction of laboratory technicians

あたま  
頭にシールをつけます。



- 4) Explanation of electrodes

Seals will be attached to your head

ぶん  
20分ぐらいかかります。



- 5) Explanation of electrode attachment procedure and time required

The child is allowed to watch DVDs and play games by iPad while waiting

It takes about 20 minutes

けんさ  
検査がはじまります。



The examination begins

- 6) Explanation of during the examination and time required



The examination will take about  
45 minutes to 60 minutes

We are watching  
you from here

What's next  
After the examination?

We are going home!



7) Explanation of how to remove the electrodes

## 5) Examination Record

Outpatient / Inpatient (Ward/Department: ) EEG Preparation Record

Recorded by: Children's nurse ( ) Laboratory technician ( )

Subject	Registration No. :      Department :      Name of disease : Name :      Sex: M / F      Age : Developmental Impairment : Yes / No      IQ : EEG : Never before / Previous record:      time(s) Name of facility :
Accompanied by (during explanatory session)	
Date of preparation	Date:      Time :      :      ~      :      (      minutes)      Place :
Date of examination	EEG recording      Sedative drugs : Yes / No Date:      Time :      :      ~      :      :
Rental request (ex. DVD)	Yes (      ) • No
Accompanied by (during examination)	Yes (      ) • No
Behaviors of the child before/after the preparation —practiced and recorded by children's nurses—	1) When introduced to the examination room and machines 2) When introduced to laboratory technicians 3) During explanation about what to do before the examination (procedure of electrode attachment) 4) When selecting DVD or a game during having electrodes attached (      ) 5) During explanation about during the examination (a) when asleep (b) when awake 6) During explanation about how to remove the electrodes 7) When reflecting the examination using a doll 8) When observing the examination room
What did the child think ( about the whole procedure)	
What did his/her parent think	
Evaluation by children's nurses	
< EEG > Behaviors of the child during the examination —practiced and recorded by laboratory technicians—	3. Whole procedure went smoothly 4. The examination was completed with minor difficulties 5. The examination was completed with struggles 6. The examination had to be quit in the middle of procedure (reason:      ) 7. The examination could not be practiced (reason:      ) 8. Other (      )
After the examination — recorded by children's nurses—	Remarks from the child  Remarks from his/her parent

#### 4. Result

There were two case examples in total: one was a patient who was hospitalized in the psychiatric department and another was an outpatient in the department of neurology. When we announced the contents of play preparations to collaborators in the hospital, a nurse manager of the outpatient department showed her concern that the light stimuli produced by PC could trigger an epileptic seizure in a subject. We then received a piece of advice from a laboratory technician that it would not be a problem when the speed of light was slowed down or the frequency of blinking was reduced. Accordingly we decided to reduce the frequency of blinking to two at a time. For such a case, an explanation was provided to the subject. In the case of individuals with previous history of seizure and/or with severe autism, we decided not to use blinking images but to use photos instead.

For the following two case examples, photo images were used instead of images produced with light stimuli.

##### 1) Case example 1

In August 2013, upon request of a doctor of the psychiatric department (pediatric psychiatrist), HPS practiced a play preparation to a child (8 year-old) who had an emotional problem in the same month. The child's mother accompanied them during the preparation. Though the child was restless, he understood the essential point of our explanation. The child reflected what he heard about the medical examination by using a doll.

On the day of the examination, the child felt secure since his mother accompanied him when he underwent the EEG. He was watching a cartoon DVD while electrodes were applied to his scalp and the procedure went well. A test that was supposed to be practiced when the child fell asleep could not be done since the child did not take a suppository beforehand. The attending doctor told us that it was good enough since the child was able to attach the electrodes and went through some tests without having any panic.

##### 2) Case example 2

In January 2014, upon request of a neurologist, HPS practiced a play preparation to a child (5 year-old) with a complex febrile convulsion. An explanatory session was given through PC to the child and his/her mother. Electrodes were applied to the child while he was playing games on an iPad. Though tests that were operated while awaking went smoothly, other tests were not be able to complete as the child was not able to fall asleep.

#### 5. Discussion

Since there are limited numbers of cases of play preparations for EEG this time, this report is focusing on designing and recording and not on evaluations and improvement. To design the preparation, HPS worked together with laboratory technicians specialized for brain waves in order to learn the procedure and the key points of the examination. There was new information and knowledge for HPS who had no experience of EEG before. Though the name EEG sounded rather familiar, it brought the realization that HPS had very little idea of the actual procedure and details of the examination. Through observing the actual examination closely, I felt children's fear and anxiety. This whole process helped me see the situation from their perspectives.

The necessity a play preparation for the examination seems very limited to certain children. In most cases, play preparations are not necessary. Children undergo the examination without particular problems when they receive proper pre-explanation and when their parent accompanies them during the examination. In cases where a child has psychological problem(s) such as a severe emotional disorder and/or developmental impairment, play preparation should be practiced in order

to predict the child's behaviors during the examination and to reduce possible distresses that the child may suffer. Though the probability is rather small, cases described in this report indicate that to design a proper play preparation for a child with a severe disorder can be useful. This is definitely a field that we shall cultivate.

## 6 . Conclusion

To practice a play preparation for examinations and treatments difficult to operate for children is imperative. It is especially hard to operate MRI with children and there are many requests for play preparations on the examination. Regarding EEG, it is still difficult to proceed but there are very few request for play preparations. For a hospital that shall respect all children, however, a play preparation shall be provided for any kind of examination or treatment.

To design a play preparation for a new field is time consuming and requires careful scheduling especially when you are engaged in other existing duties. It does however provide important new experiences for HPS to build up skills and eventually helps to realize one of our objectives "For all children. Everything is for all children" one day. To achieve our goal, more practices shall be needed through working together with other HPS and children's nurses.

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