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Making a Decision Support System with the Electronic Medical Record

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Abstract

We have been developed and used the electronic medical record system for 12 years. For integrate the text, data, and image, we have constructed the record that based on XML[1]. But, we had some problem for reporting and evaluation. We adopted the diagnosis and the unification of terminology for the common understanding. For the solution of these problems, we need the making the decision support system and the coding system. Thereupon, we make the model of the diagnosis process and make the preparation of the system. In this time, we did the evaluation of the system in the nursing region, because our database is established.

Keywords:

decision support, nursing process, medical record

Introduction

Our electronic medical record system has made the construction of the database by XML, for the purpose of that does information interchange. The correspondence to the tag of XML was a subject in the record of SOAP. The relation between the problem and goal are important in SOAP. Thereupon, it made to evaluate this relation.

We have made the nursing support system[2]. In its system, we had been needed the recognition of nursing diagnosis. So, we made the system of nursing process. In these ways, we think that the process state is important.

Thereupon, we tried that traces the changes of the process.

In the preparation of the plan, we make the goal corresponding to the problem. For example, we implement a plural plan while doing treatment. We evaluate the change in this process. As a result, we trace the problem and plan, and check the relation with the problem. The factor of judgment is analyzed from these relations.

We accumulate these analysis results as database and use to the support of the plan and assessment.

Methods

We made from patient information to SOAP that use as the record of the electronic medical record. However, it is difficult to trace the changes of the process with only this. Thereupon, we added the part that registers the process of assessment, diagnosis and evaluation.

The flow of the system and data are shown in Figure 1.

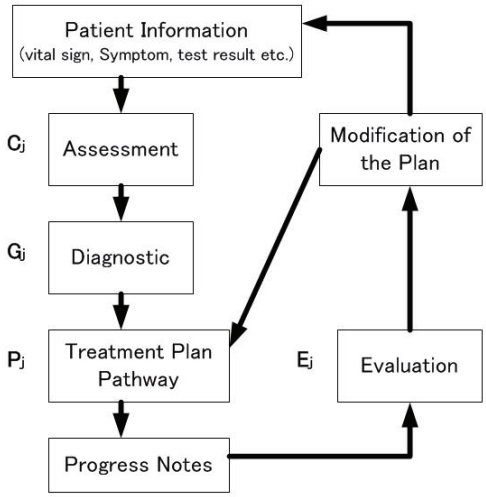

Figure 1 - System flow

The flow of the process is as follows.

1. It is making the problem list of patient information and summarized the symptom. (C_j)
2. It is making the goal corresponding to the problem. (G_j)
3. It is making the plan corresponding to the cause of diagnosis. (P_j)
4. It is making the evaluation to the plan. (E_j)

Where, G_j , P_j , E_j are recorded with the relation C_j.

We evaluate the change of this process by such a method. We make database this, from the result that evaluated. In such a period when treatment ends, it records the changes to these goals.

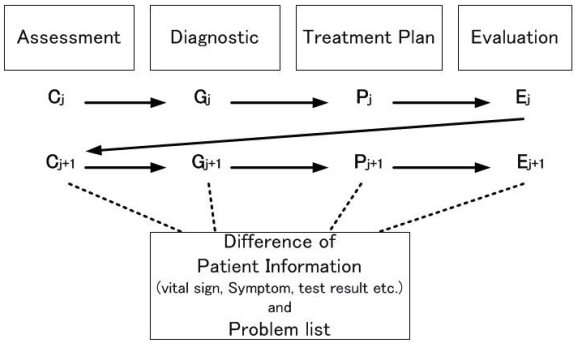

Figure 2 – Data Relationship

The data of this patient basic information are always held as even, the process of the diagnosis and plan are able to trace. Figure 2 shows the relation between the data and record in this system.

In addition to this, we record the skill and viewpoint of the user. These factor is used for the standard of the classification.

In this system, the candidacy of the diagnosis is selected from these data. These are not an automatic diagnosis in each process. Here is building a relation data of selecting and degree of preference.

Results

The system of the region of the physician is incomplete, although the system of the nursing region was finished. this reason is need the unification of terminology for using diagnosis.

However, It is possible to supports the process of the nursing diagnosis. The support of diagnosis and plan has obtained many satisfactions. As shown in this result, most users are answering this result as being that support was effective.

We are evaluating which item and template are effective in the critical pathway by using this system. This is useful for the preparation of the critical pathway.

This application effect of this system was investigated as a different viewpoint. This survey is classified by the experience years.

Furthermore, we are using to education and discussion such the analysis result.

Conclusion

In the nursing region, we are utilizing this system actually. By this system, we were able to unify the data on the record.

As this result, we ware able to analyze the condition of the branch on each problem list. By using this data, we are evaluating the diagnosis database.

However, the improvement is necessary about the user interface for the diagnosis support.

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