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[AP1-E2-4-01] How to Improve the Workflow for Processing Genetic Test Results in an Electronic Medical Record System

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Keywords: Precision Medicine, Pathology System, Genetic Testing

Our aim is to eliminate the disadvantages of genetic testing reported on paper. We propose a scope that should be systematized in the first step of digitalizing genetic testing. The proposed method is to order a genetic test as an additional test to a tissue specimen that has already been obtained. As a result of the development of a prototype system based on the proposed method, it was found that the electronic medical record system can handle genetic test information from the time of test request.

How to Improve the Workflow for Processing Genetic Test Results in an Electronic Medical Record System

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Abstract

Our aim is to eliminate the disadvantages of genetic testing reported on paper. We propose a scope that should be systematized in the first step of digitalizing genetic testing. The proposed method is to order a genetic test as an additional test to a tissue specimen that has already been obtained. As a result of the development of a prototype system based on the proposed method, it was found that the electronic medical record system can handle genetic test information from the time of test request.

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Introduction

One of the NCGM's missions is to promote precision medicine. The cancer genome panel test is now eligible for social security payments and genetic testing is expected to become more frequently in the future.

Genetic testing is generally carried out by sanitary laboratories that have passed the QC requirements of the test.

The use of paper reports provided by sanitary laboratories describing the interpretation of results was the most common.

For this reason, reports for each gene mutation are stored in the electronic medical records of hospitals in PDF format.

Unlike common laboratory tests, it is sufficient to perform only one genetic test per test item in a lifetime. Therefore, it is necessary to check in advance to avoid duplicate inspections before requesting a new one. It is necessary that your doctor has been referring to all the reports in your electronic medical record and requesting only the genetic tests you need. The burden on the doctors in charge is heavy [1-2].

Most of the genetic tests conducted in the past were outsourced tests. Paper reports were returned and accumulated. The current issue is that the information on the results of the genetic tests stored in the electronic medical record system is not available. It is a human-readable PDF format, not a machine-readable data format [3].

Methods

All genetic test reports will be stored in a machine-readable format to facilitate retrieval.

However, it will take some time to achieve this.

Therefore, as the next best measure, we propose a method to reduce the burden on physicians in charge.

(1) Systematization of genetic test request slips.

(2) To enable additional orders for genetic testing for specimens obtained by pathology orders (histology) already implemented in the electronic medical record system.

(3) When receiving a report of test results from the pathology laboratory order (histopathology), the specimen number issued by the pathology department system is also received.

(4) Maintain correspondence between pathology test results and specimen numbers in the electronic medical record system.

(5) When ordering a genetic test, select a previous sample and issue an additional order.

(6) When ordering a genetic test, check previous genetic test items to prevent duplicate requests

Figure 1 shows an example of the implementation screen.

Figure 1- Pathology Order Screen

(explanatory notes of Figure 1.) 1: Patient ID, 2: Patient name, 3: Specimen list, 4: Selection button, 5: Specimen ID number, 6: Date of collection, 7: Collecting Method, 8: Type of organs 9: Item number, 10: Genetic test items, 11: Search button (genetic testing) 12: Cancel button, 13: Confirmation Button

Figure 2 shows a proposed operation workflow.

Results and Discussion

- A prototype system of the proposed specifications was built and verified.

- By controlling the genetic test items that can be requested for each specimen by master setting, we were able to prevent illegal orders from being issued.

- The proposed method is also effective for the Cancer Genome Panel test.

In the future, it will be possible to receive reports from health laboratories in a machine-readable format.

We are planning to develop a function to overview the status of genetic testing for each patient.

Conclusion

As a result of the development of a prototype system based on the proposed method, it was found that the electronic medical record system can handle genetic test information from the time of test request. The proposed method suggests the feasibility of an efficient genetic testing workflow.

References

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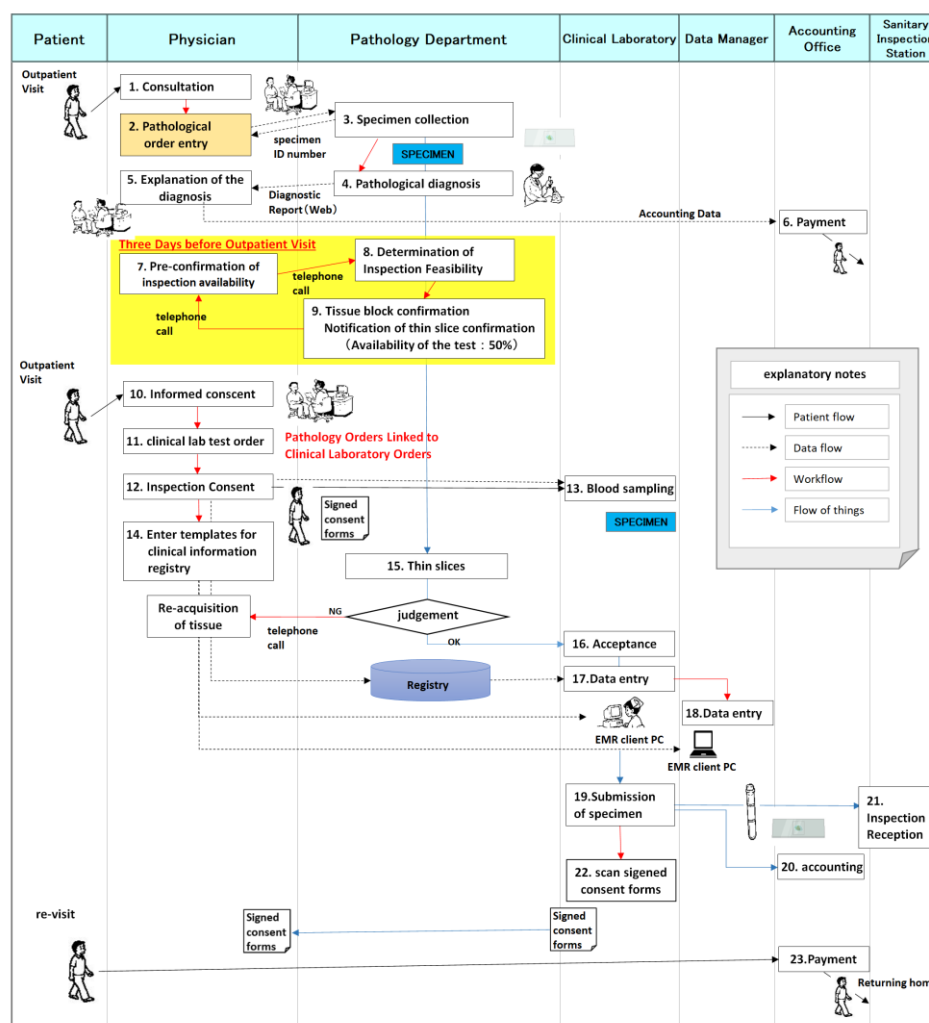1-21-1 Toyama, Shinjuku-ku, Tokyo 162-8655, Japan
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Figure 2- proposed operation workflow