



Establishing a medical supply pricing system to streamline the billing process and promote energy conservation and carbon reduction.

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Introduction

In this study, we have developed a "**Medical Supplies Billing System**" and explored its impact on simplifying the time required for the medical supplies billing process, improving the accuracy of billing, and promoting energy conservation and carbon reduction. This information system is innovative in integrating procedure codes with medical supply package concepts. The system proactively calls for the contents of the corresponding package based on the procedure code, allowing nurses to quickly and accurately calculate charges. The research involves a multidisciplinary team, including physicians, nurses, billing clerks, and information engineers. Through the development of the "Medical Supplies Billing System," three key functionalities are implemented: simplification of the medical supplies billing process, improvement in billing accuracy, and promotion of energy conservation and carbon reduction.

Methodology

The study focuses on the nursing staff in the inpatient wards of a medical center in Southern Taiwan. The research is divided into three stages:

1.Requirement Analysis :

- *Conducted a thorough literature review, clinical observations, and interviews to analyze the requirements for the "Medical Supplies Billing System."
- *Formulated the architecture of the medical supplies billing system based on the findings from the requirement analysis.

2.System Development and Refinement :

- *Utilized the prototyping method for system development and continuous refinement.

3.Evaluation through Questionnaire Survey :

- *Employed a questionnaire survey method to assess the impact of the system on the medical supplies billing process in terms of time simplification, billing accuracy, and extent of energy conservation and carbon reduction.

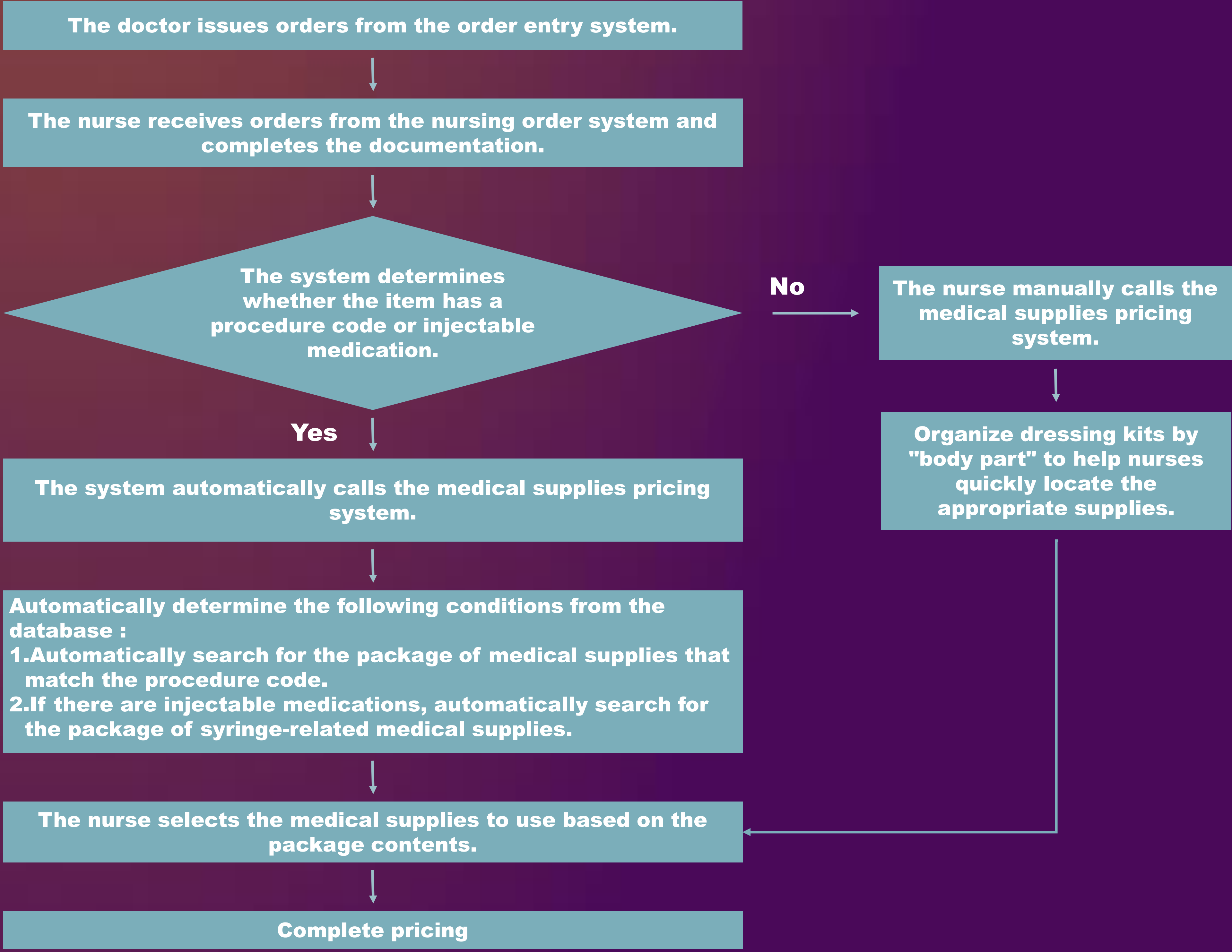


Image 1 : Main process of medical supplies pricing system

This system features :

1.Integration of physician orders and medical supply package concepts, with the system actively calling up corresponding package contents for nurses to quickly and accurately price.

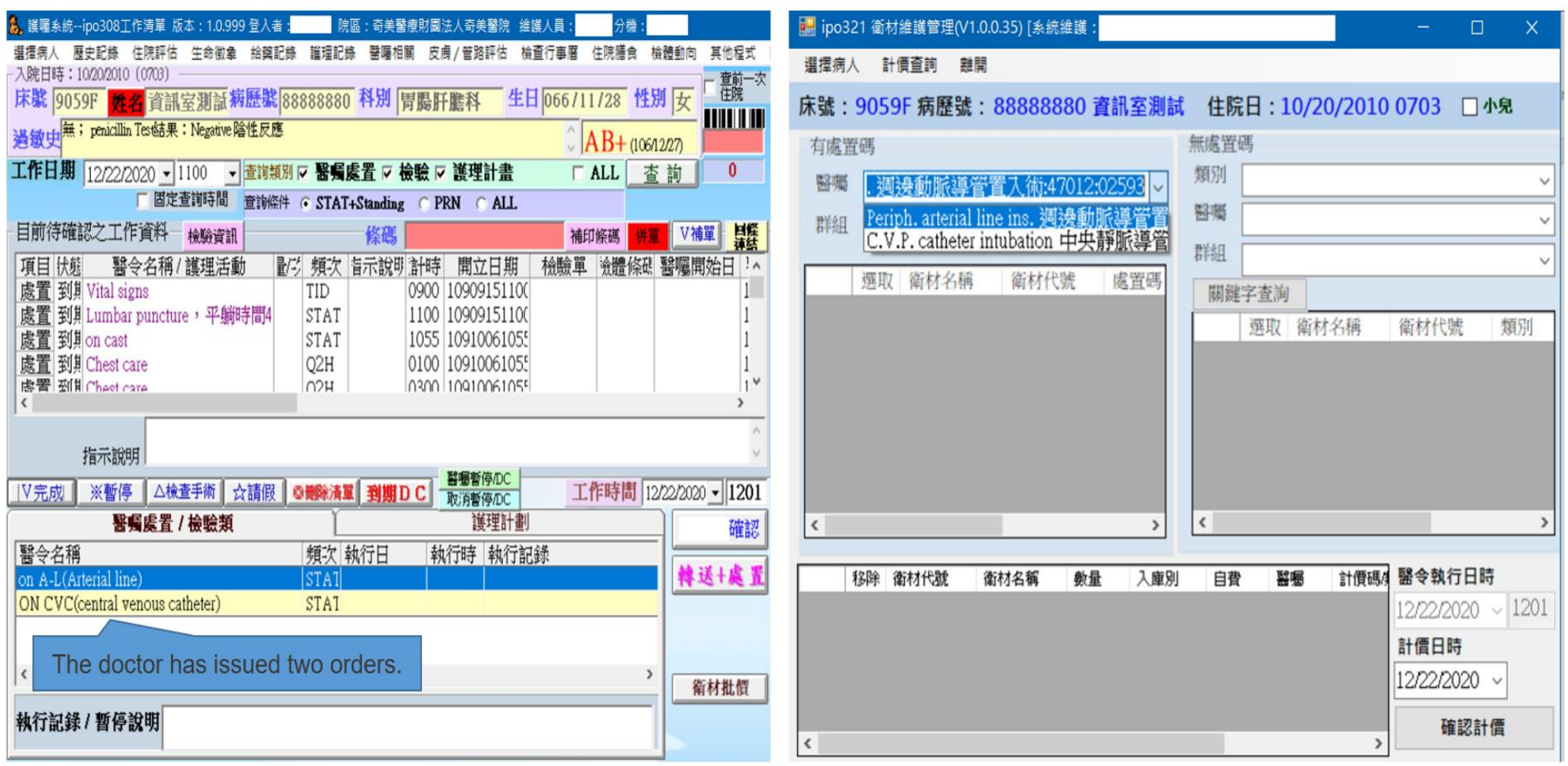
2.For items without disposal codes, using 'body part' as a classification concept to provide nurses with a common language for quickly finding package medical supplies.

Additional features :

1.Provide a query function for nurses to check the procedures and billing details already performed for patients, avoiding retrospective billing and reducing the risk of missed billing.

2.Provide a query function for unit supervisors to check all billed items for the unit within a certain period, facilitating inventory management of medical supplies.

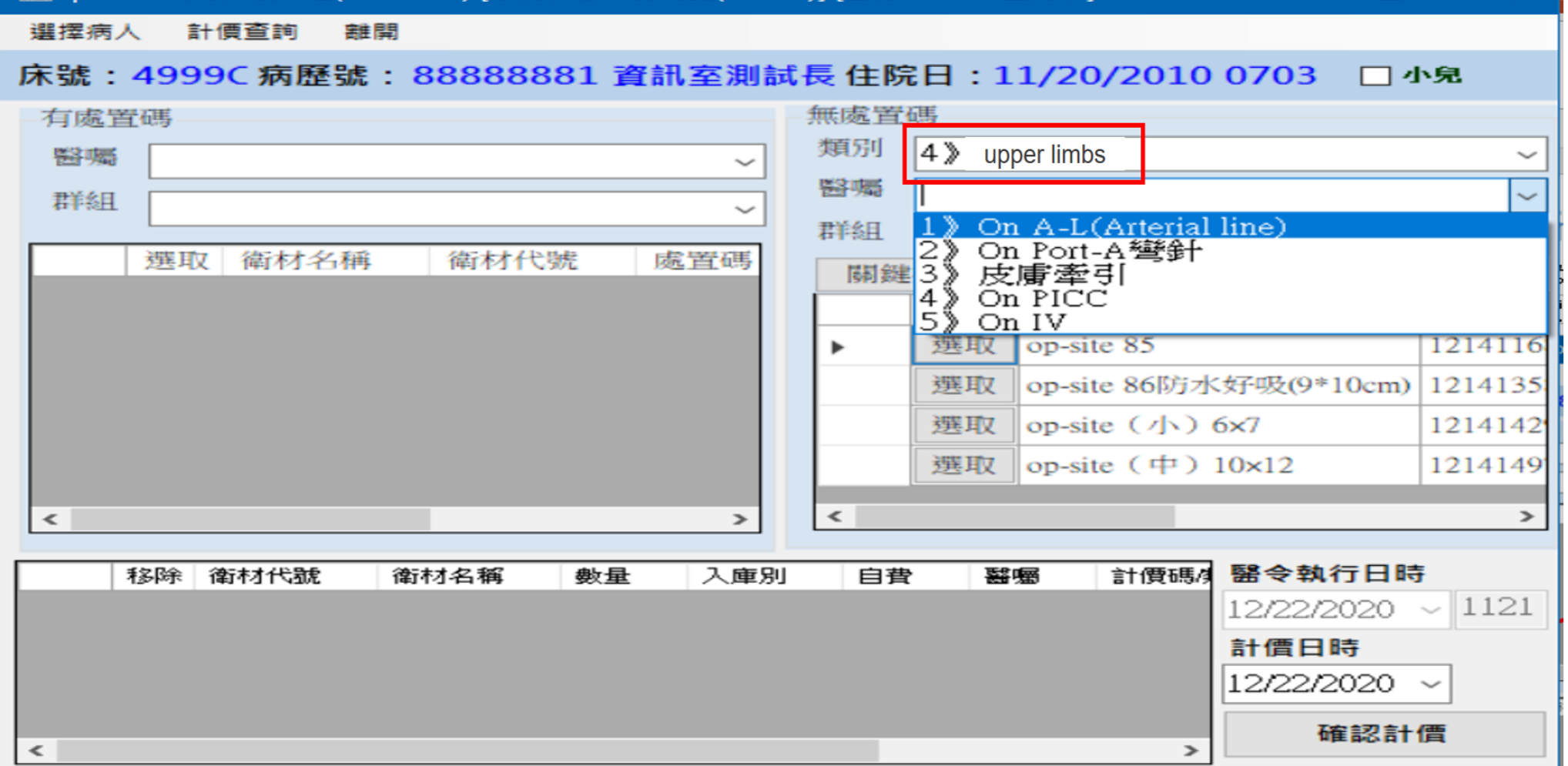
The computer automatically determines and calls the medical supply billing system based on the physician's orders, automatically searching for the package of medical supplies that match the prescribed procedure.



The nurse selects the medical supplies to use based on the package contents.



For procedures without specific codes, categorize them based on "body parts," allowing nurses to quickly find the appropriate package of medical supplies on their own.



Results

Using a 50-bed ward as an example, the system demonstrated significant time savings for pricing personnel, approximately 125 minutes per day per ward. The system also improved the immediate billing completion rate for nurses, reaching an average of 93.3%. Taking a specific medical center as an example, the system contributed to substantial paper reduction in billing documents, saving approximately 379,600 sheets per year, equivalent to preserving 45.56 trees annually.

Discussion

The information system, upon implementation, has demonstrated outstanding performance in enhancing efficiency, reducing errors, and saving costs and resources. It holds the potential for widespread application in medical institutions. However, during the initial phase of system establishment, considerable time was spent reaching a consensus and organizing the contents of the various packaged medical supplies. Therefore, for future implementations, it is recommended to further subdivide the contents of the packages based on departmental characteristics to better align with clinical operational needs.