Design and Application of A Decision-Making System for Heart Failure in Nurse-Led Clinics

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Introduction

The standardized prevalence rate of the population aged ≥25 years in China is 1.01%, with a significant proportion (40.5%) experiencing ≧ 3 hospitalizations.Additionally, there is a one-year mortality rate of 7% and a substantial economic burden, which significantly impacts the overall quality of life . Therefore, comprehensive and multidisciplinary management of discharged heart failure patients is imperative. A decision-making system for heart failure in nurse-led Clinics aims to enhance intelligent and standardized management of heart failure patients based on evidence-based guidelines to support clinical decision-making.

Aim

In order to refine for continuity of care and improve the efficiency of decision-making in nurse-led clinics, the information team designed and completed the heart failure nursing clinic decision-making system, which predefines the decision- making pathway, shortens the decision-making time, and improves the integrity of the decision-making.

Method

Research Framework:

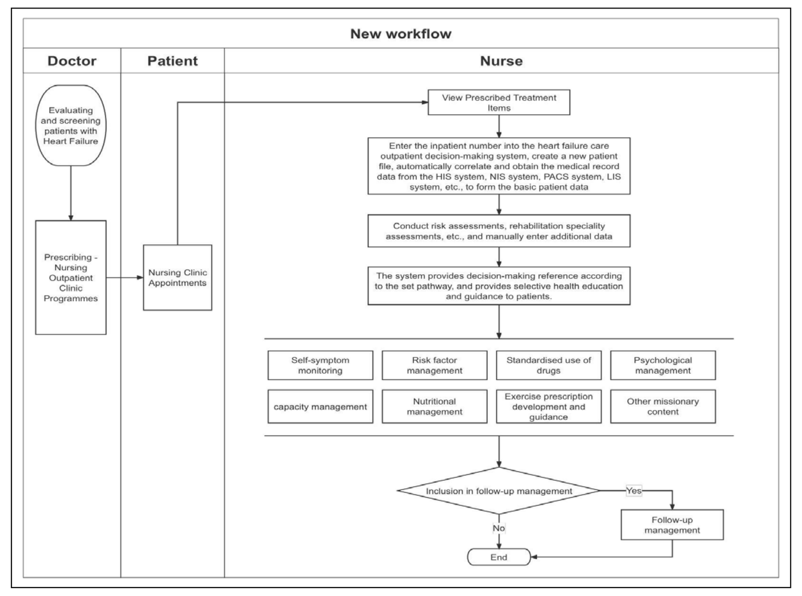
1. Formation of nurse-led multidisciplinary teams,Including doctors, IT engineers, nutritionists, etc.

2. Demand Analysis: Semistructured in-depth interviews are employed to comprehend the requirments of outpatient staff to informative purposes.

3. Process Re-engineering: Sorting out the workflow and system functional flow of nursing clinics.

4. System Development: Integrating with the workflow, designing and enhancing the system's functional architecture and interface based on user needs.

Figure 1



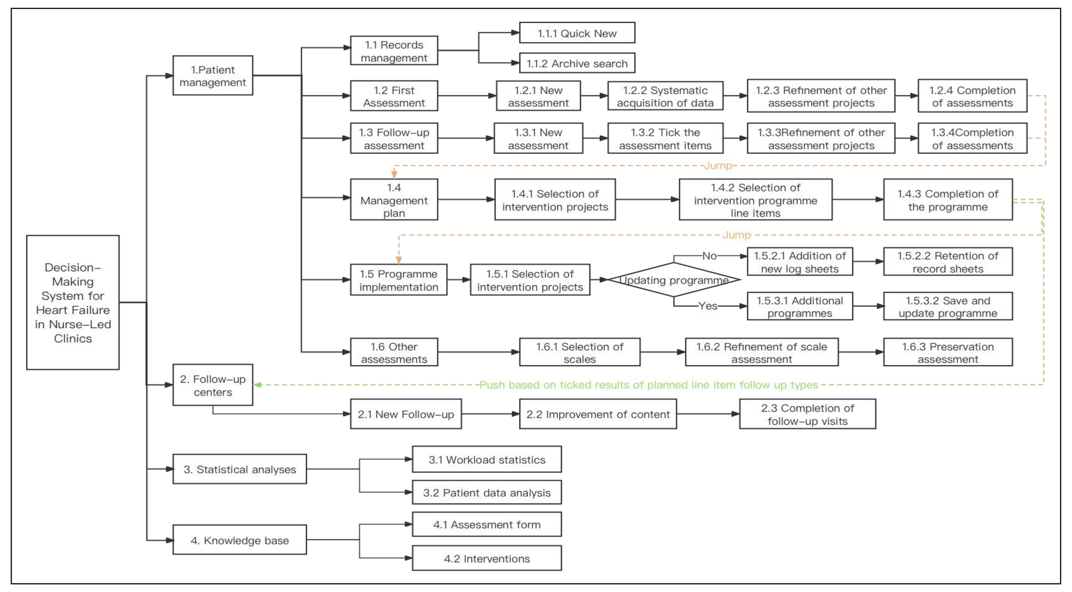


Figure 2

Results

The existing workflow undergoes transformation, as depicted in Figure 1.

Based on this process, the system functional flowchart is devised, as illustrated in Figure 2.

Building upon the functional flowchart, a preliminary design of the decision-making system's functional architecture prototype is formulated, resulting in the formation of the subsequent functional modules: main interface, patient management interface, follow-up center, statistical analysis, and knowledge base; all presented in Figure 3.

Figure 3

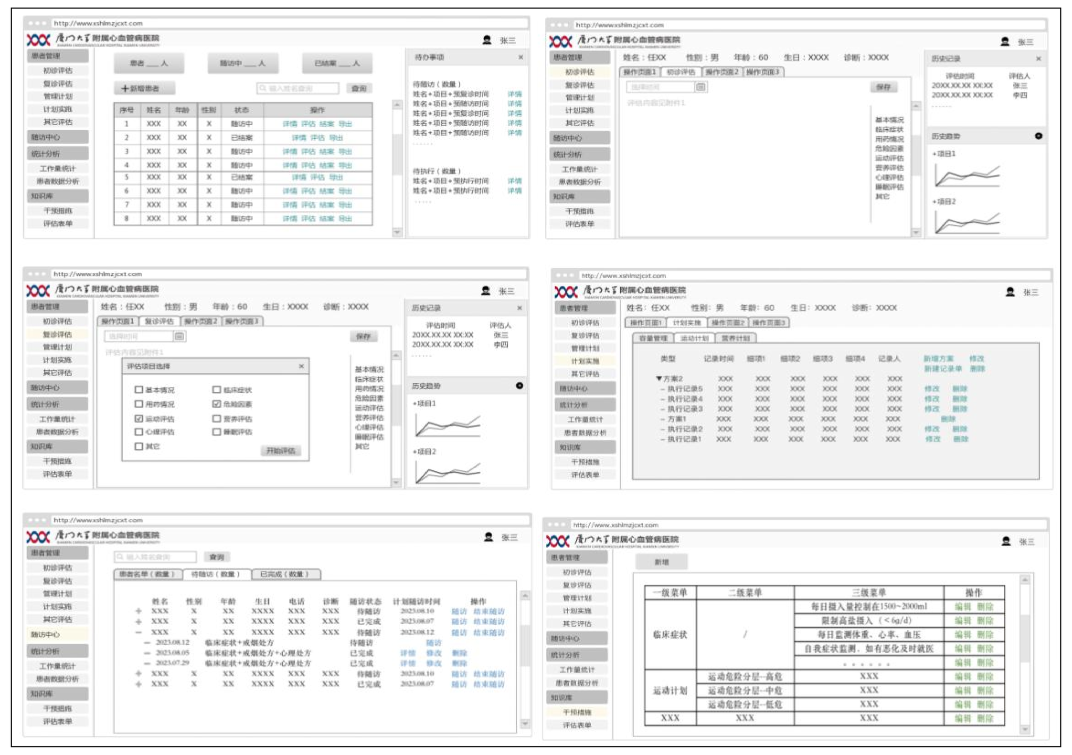


Figure 4

Subsequent to aligning requirements with engineers' input, enhancements are made to refine the system interface design as showcased in Figure 4.

Conclusions

By integrating HIS, NIS, PACS, LIS and other systems to automatically obtain the required data, the evaluation time is reduced from an average of 20min to 5min.The decision-making system for heart failure, based on predefined pathways, will expedite the nurse's assessment process, optimising workflow,offer effective decision-making support, facilitate standardized management of throughout the entire procedure, and is an effective tool to aid decision-making.

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Abstract

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2.Methods
Research Framework: 1. Formation of the team. 2. Demand Analysis: Semi-structured in-depth interviews are employed to comprehend the requirements of outpatient staff for informative purposes. 3. Process Re-engineering: Sorting out the workflow and system functional flow of nursing clinics. 4. System Development: Integrating with the workflow, designing, and enhancing the system's functional architecture and interface based on user needs.

3.Results
The existing workflow undergoes transformation. Based on this process, the system functional flowchart is devised. Building upon the functional flowchart, a preliminary design of the decision-making system's functional architecture prototype is formulated, resulting in the formation of the subsequent functional modules: main interface, patient management interface, follow-up center, statistical analysis, and knowledge base. After aligning requirements with engineers' input, enhancements are made to refine the system interface design.

4.Conclusions
The decision-making system for heart failure, based on predefined pathways, will expedite the assessment process, offer effective decision-making support, facilitate standardized management of throughout the entire procedure, and is an effective tool to aid decision-making.