ARTICLE

The Role of Artificial Intelligence in Eradicating Therapeutic Nihilism and Optimizing Complex Pharmacotherapy: A Narrative Review

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INTRODUCTION

Recognizing the invaluable synergy between medical science and artificial intelligence (AI), this review outlines a proposed collaborative framework between the Department of General Medicine and the Department of Artificial Intelligence. The primary objective is to yield groundbreaking advancements in healthcare by leveraging the respective expertise of both institutions. The central focus of this initiative is to define and evaluate the role of AI in evading therapeutic nihilism, particularly within the context of managing complex conditions such as hypertension[1].

PROBLEM STATEMENT

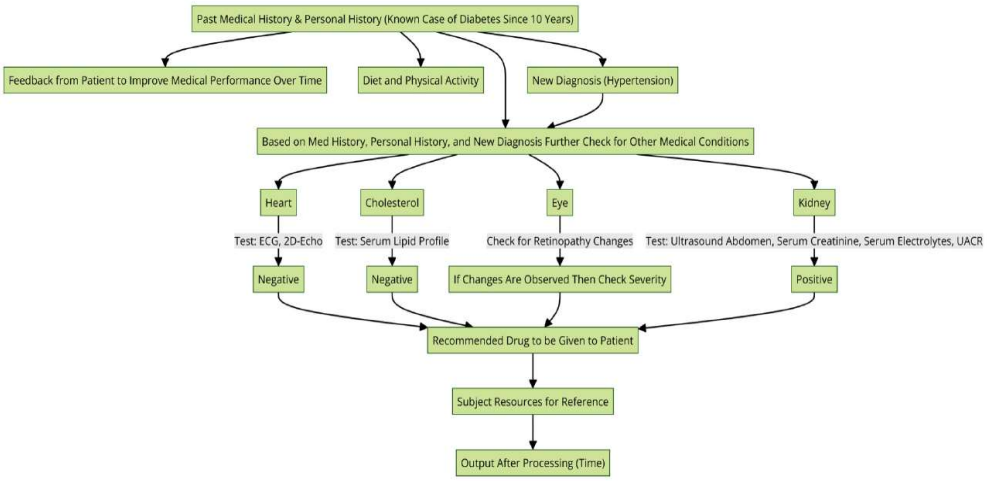
Despite significant advancements in medical treatments, therapeutic nihilism remains a formidable challenge in contemporary clinical practice. This phenomenon is characterized by skepticism among some healthcare providers regarding the effectiveness of specific interventions, which can inadvertently lead to the under-treatment or mismanagement of patient care[2]. In the context of increasing pharmacotherapy complexity—especially for patients presenting with multiple comorbidities—there is a critical need to enhance prescription review processes to prevent adverse drug events[3,4].

This research aims to explore how artificial intelligence can directly counter therapeutic nihilism by providing robust, data-driven insights[5]. By integrating advanced AI algorithms with comprehensive healthcare databases, the proposed system is designed to enhance diagnostic accuracy, personalize treatment plans, and shift healthcare providers' perspectives toward a more evidence-based, optimistic view of medical interventions[6,7]. Specifically, the system will evaluate patient history and comorbidity data to identify potential drug interactions, flag contraindications, and recommend precise dosage adjustments, thereby reducing the burden of polypharmacy and medication-related complications[8].

PLAN OF ACTION AND CLINICAL WORKFLOW

The proposed methodology encompasses a wide range of targeted areas in the treatment of hypertension, emphasizing dosage adjustments in specific clinical scenarios, identification of contraindications for certain drugs, and proactive polypharmacy prevention. The clinical workflow integrates comprehensive patient data to guide real-time therapeutic decisions. The procedural algorithm mapping this integration is detailed in the flowchart below.

Flowchart 1: Plan of Action



CLINICAL APPLICATION: MANAGING COMPLEX COMORBIDITIES

To illustrate the AI's capability in navigating complex clinical scenarios, the framework is applied to a patient presenting with Type 2 Diabetes Mellitus (T2DM), Systemic Hypertension (S.HTN), Chronic Kidney Disease stage 4 (CKD-4), and Proteinuria. The AI system assesses the prescription, provides feedback on contraindications, and guides the optimal selection and monitoring of pharmacological agents (such as ACE inhibitors or ARBs) while strictly tracking vital parameters like eGFR[9].

Flowchart 2: Comorbidity Management Pathway

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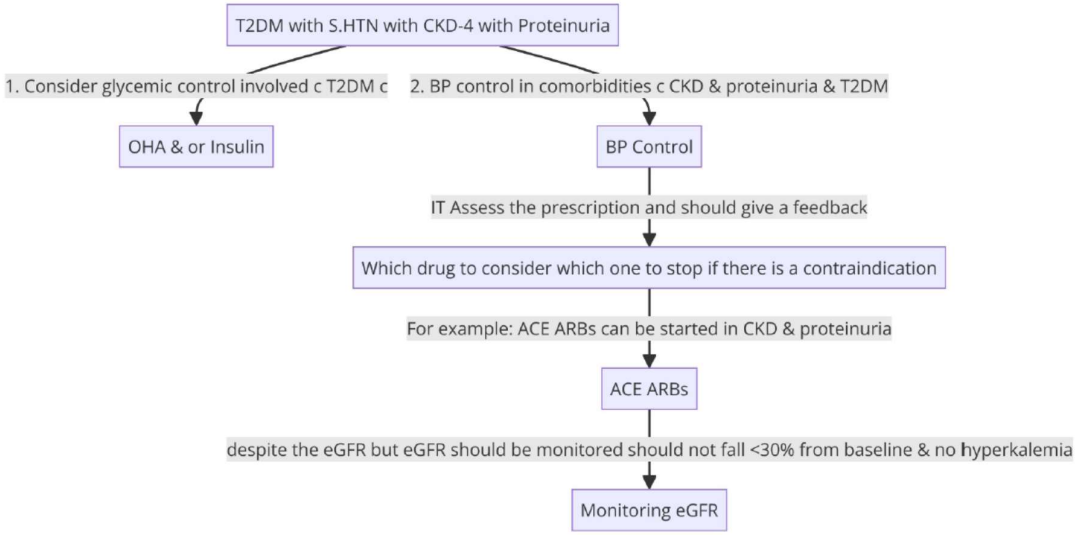

EXPECTED OUTCOMES

The implementation of this AI-powered decision-making process is expected to result in markedly better patient outcomes, increased treatment adherence, and a significant reduction in instances of under-treatment or clinical mismanagement [5, 6]. By providing real-time, actionable alerts, the system is anticipated to augment the ability of healthcare providers to make informed, safe prescription decisions [7]. Ultimately, this collaborative research and innovation between the Medical and AI departments will create a tangible impact, improving overall patient safety and optimizing treatment trajectories in an increasingly complex pharmacotherapeutic landscape.

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