

The Potential of Health Information Systems to Promote Rational Medicine Use in South Africa

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BACKGROUND

South Africa is currently embarking on transforming the health system with the implementation of a National Health Insurance (NHI) scheme, aiming to attain Universal Health Coverage (UHC)¹. A vital component of realising UHC is the achievement of Sustainable Development Goal 3.8, which emphasizes access to "safe, effective, quality, and affordable essential medicines and vaccines for all"². To accomplish this objective, adhering to Rational Medicine Use (RMU) principles is crucial. RMU ensures that patients receive medications suited to their clinical needs, at appropriate doses and durations, and at minimal cost to individuals and communities³. Health Information Systems (HIS) play a crucial role in facilitating interventions by enhancing the acquisition, storage, and analysis of health-related data, thus enabling effective strategies for promoting RMU.

NHI and RMU

The NHI Bill stipulates the requirement for creating an information platform to guide decision-making. One aspect of this platform involves monitoring "compliance with standard treatment guidelines, including prescription adherence to the Formulary"⁴.

Synchronised National Communication in Health (SyNCH) for RMU

The SyNCH HIS was developed to standardise and promote RMU and is used in the context of the Central Chronic Medicines Dispensing and Distribution (CCMDD) programme. The South African public health sector emphasises RMU through the National Drug Policy, Standard Treatment Guidelines (STGs), and Essential Medicines Lists (EMLs). The CCMDD provincial formularies are expected to align with the STGs and EMLs. SyNCH's electronic prescribing module facilitates structured prescribing by pre-programming CCMDD formularies based on indications, medications, and dosages. This mechanism ensures that only approved medicines are accessible for specific indications, reinforcing adherence to RMU principles.

OBJECTIVES

- Identify irrational prescription trends for angina pectoris using data from a HIS (SyNCH).
- Assess the feasibility of using HIS data to monitor and evaluate adherence to STGs.
- Explore the potential of accessing medicines approved for angina pectoris for other chronic conditions.

METHODOLOGY

Design and setting: Retrospective evaluation of SyNCH prescriptions in 1 district within 1 province in South Africa.

Inclusion criteria:

- Adults over the age of 18 years.
- All prescriptions with medicines prescribed for angina pectoris.

Sample size: A convenience sampling approach was used for the period 1 January 2022 to 31 December 2022. A total of 16 816 prescriptions were included in the evaluation.

Measures of interest

- The proportion of prescriptions that follow the STG recommendations for long-term prophylaxis against thrombosis and symptom relief in angina pectoris, as well as the treatment involving beta-blockers or calcium channel blockers.
- The common comorbidities associated with angina pectoris when monotherapy was prescribed.

Data collection and analysis

All CCMDD provincial formularies were analysed to determine which indication and medicine recommendations were consistent across all provinces.

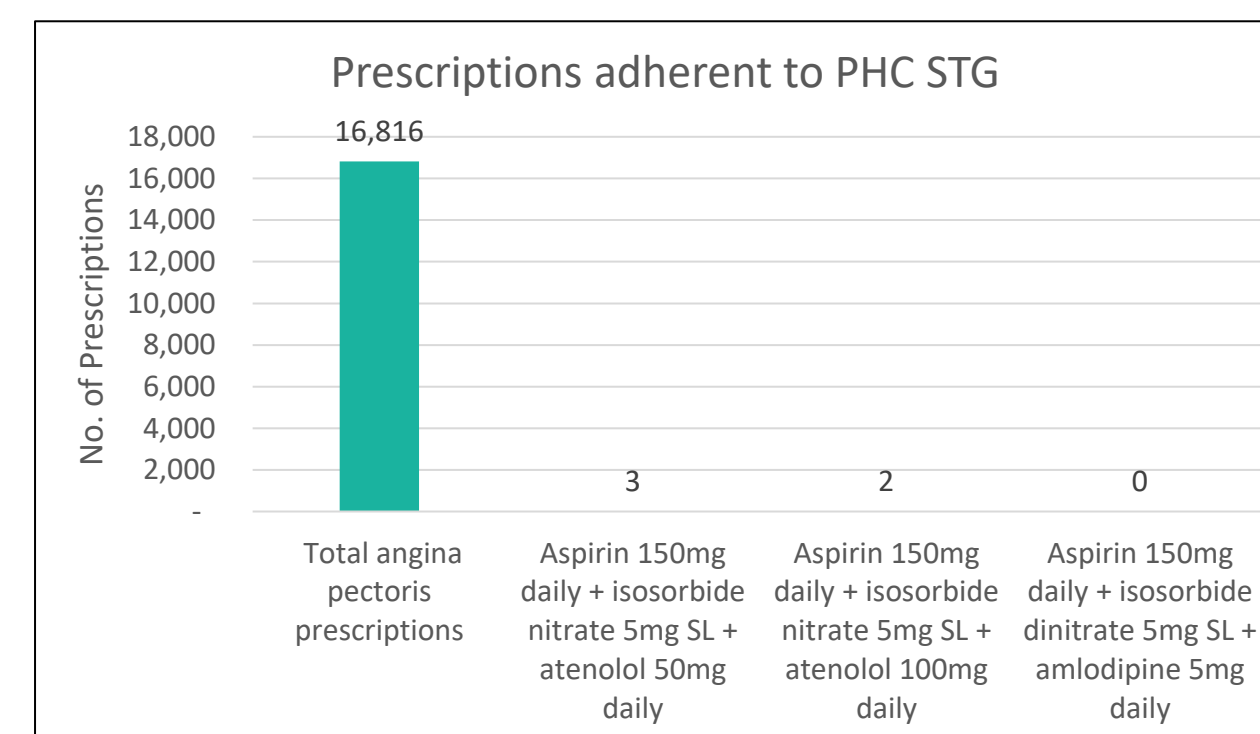
Aggregated data for the measures of interest were extracted from the SyNCH database in Microsoft Excel[®] format. Prescriptions were verified to be unique with the use of a prescription identifier number. All prescriptions included in the evaluation were assessed against treatment recommendations provided the Primary Healthcare (PHC) STGs⁵. All quantitative data were analysed using descriptive statistics.

RESULTS

Across all provincial CCMDD formularies, the medicine and dosage recommendations for angina pectoris were consistent with the PHC STG 2020.

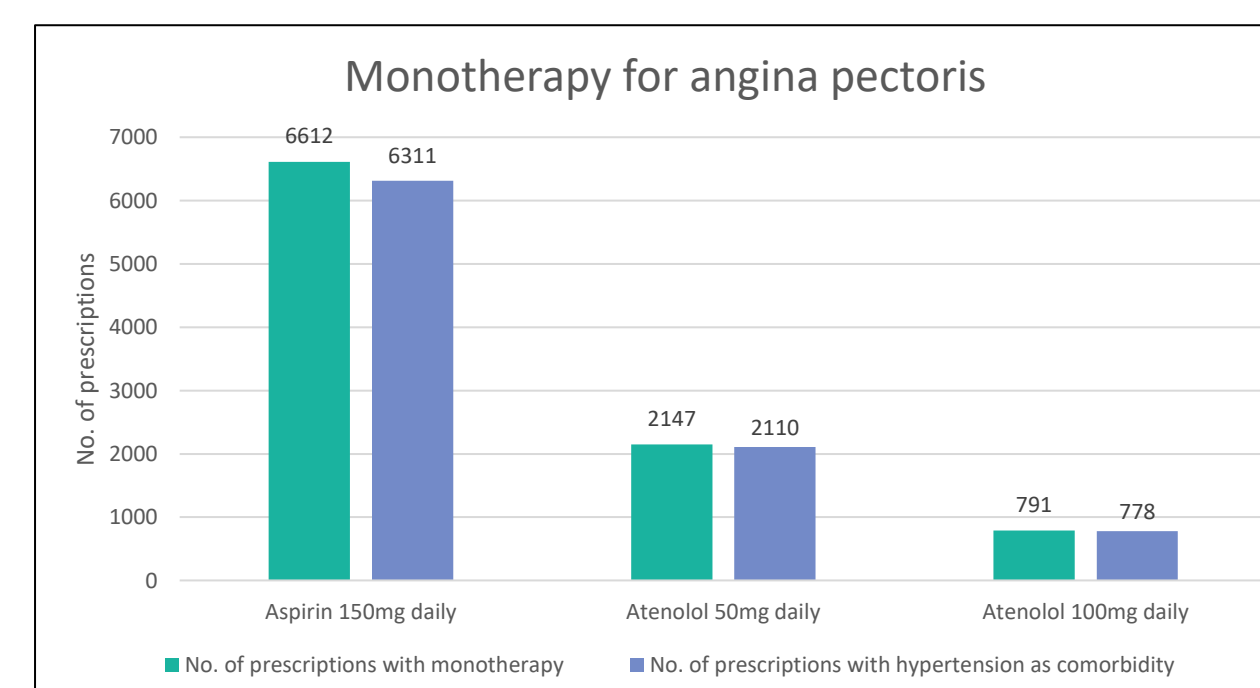
A total of 16 816 prescriptions with the indication of angina pectoris were extracted. Of the 16 816 prescriptions included in the evaluation, five prescriptions (0.03%) were assessed to be adherent to PHC STG recommendations (see figure 1). These 5 prescriptions had a combination of aspirin, sublingual isosorbide dinitrate and a beta-blocker (whilst no prescription contained a combination with a calcium channel blocker). A total of 9 500 prescriptions had either aspirin or atenolol as monotherapy (56.49%).

Figure 1: No. of prescriptions adherent to STG recommendations for angina pectoris



In figure 2, monotherapy with aspirin and atenolol was found in 6 612 prescriptions and 2 938 prescriptions respectively. Further analysis revealed that of the 6 612 prescriptions for aspirin, hypertension was the most common comorbidity in 6 311 prescriptions (95.45%). Similarly, hypertension was the most common comorbidity for 2 110 prescriptions (98.28%) that contained atenolol 50mg daily, and 778 prescriptions (98.36%) for atenolol 100mg daily.

Figure 2: Monotherapy for angina pectoris



DISCUSSION

Utilising HIS data: The results show that individual patient prescription data can be extracted on demand from a HIS such as SyNCH in order to identify trends in prescribing practices. This data can be used for targeted academic detailing or other RMU interventions to address irrational prescribing.

Role of STGs and formularies: STGs play a crucial role in promoting RMU and provides recommendations for standardised care to patients across South Africa. Formularies aligned to STGs not only provide equitable access to medicines and clinical consistency in treatment, but are also critical in containing healthcare costs within a NHI environment. Various countries that implement some form of NHI utilise medicine reimbursement policies based on guideline and/or formulary recommendations^{6,7}.

Implications of Non-adherence to STGs and/or formularies: Non-adherence to formularies and guidelines can result in out-of-pocket expenses for patients^{6,7}. Applying medicine reimbursement policies based on guidelines, as in other NHI models, would only cover a small percentage of angina pectoris prescriptions in this evaluation.

Comorbidities associated with angina pectoris monotherapy: Comorbidity data was extracted from the central database and evaluated for trends. Aspirin and atenolol were identified as the most commonly prescribed medicines for angina pectoris as monotherapy, despite the PHC STG recommending a minimum of three medicines. Upon further analysis hypertension was found to be the most common comorbidity in patients receiving monotherapy with these medicines. The PHC STG and EML 2014 edition recommended the use of atenolol in the final step of the treatment of hypertension preceding referral of the patient to hospital level⁸. Atenolol was subsequently removed as a recommendation in the PHC STG and EML 2018 edition due to evidence of superior efficacy of spironolactone to beta-blockers in resistant hypertension⁹. This may be indicative of the prescriber's intention to access other medicines such as atenolol through angina pectoris for the indication of hypertension. Data from HISs that identifies trends such as this can be used as a trigger for RMU interventions such as academic detailing or conducting a Medicine Use Evaluation to confirm if the assumption is correct.

CONCLUSION

In the context of the NHI environment, the strategic integration of HIS holds immense promise for advancing RMU, ultimately leading to improved patient outcomes and significant cost savings. By harnessing the power of data-driven insights, HIS empowers healthcare providers, NHI fund administrators, and policymakers to make informed decisions that optimise medication management within the NHI framework.

ADVOCACY MESSAGE

As HIS continue to evolve and expand their reach, their role in promoting RMU remains pivotal in the journey toward a more efficient, equitable and more impactful healthcare landscape within the NHI.

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