



Ministry of Health Malaysia  
Pharmaceutical Services Programme

# CARDIOVASCULAR CARE BUNDLE MEDICATION THERAPY ADHERENCE CLINIC (CCB-MTAC) PROTOCOL

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## FOREWORD



The introduction of the Cardiovascular Care Bundle Medication Therapy Adherence Clinic (CCB-MTAC) in 2017, alongside the implementation of the Enhanced Primary Healthcare (EnPHC), represents a critical step forward in the effort of managing chronic conditions. EnPHC was designed to address the three most prevalent non-communicable diseases (NCD) in primary care: diabetes mellitus, hypertension, and dyslipidemia. These conditions significantly impact health outcomes and quality of life. In response, the CCB-MTAC was proposed as an expansion of the Diabetes Medication Therapy Adherence Clinic (DMTAC) to manage these three key NCDs more effectively within primary care settings.

The CCB-MTAC initiative has made a profound impact in supporting patients to better manage their conditions through improved medication adherence and tailored care. As of September 2024, a total of 50 health clinics in Ministry of Health Malaysia out of 86 EnPHC health clinics provide this service, underscoring its growing reach and success within the primary care network. This expansion reflects the program's effectiveness in empowering healthcare providers and improving patient outcomes at the community level.

This edition of the protocol is an update of the original document which was released when this service was first initiated. It is hoped that with this revision and subsequent refinement of the training program for CCB-MTAC, it will be a continued success and address the evolving needs of our population in working towards a healthier future for the country.

Thank you.

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## OVERVIEW

Non-communicable diseases (NCDs) such as cardiovascular disease, stroke, cancer, chronic respiratory diseases and diabetes, are the leading cause of mortality in the world. The number of people, families and communities afflicted is growing in number. All age groups and all regions are affected by NCDs. Generally, risk factors that contribute to the major NCDs are modifiable, which include tobacco and alcohol use, unhealthy diet, insufficient physical activity, obesity, raised blood pressure, raised blood sugar and raised cholesterol<sup>1</sup>.

The rapid rise in NCDs has threatening socioeconomic impacts, especially when it involves lengthy and expensive healthcare cost. To lessen the impact of NCDs on individuals and society, the Ministry of Health, Malaysia has formulated a new initiative in 2017 to enhance primary health care provided to the people<sup>2</sup>. This initiative aims to improve the management of NCD by enhancing screening processes, identifying the risks and ensuring NCD patients' care continuity<sup>3</sup>. Given the rising prevalence of cardiovascular diseases (CVD), which is a leading cause of morbidity and mortality in the country, Malaysia has implemented various strategies to improve outcomes through coordinated and comprehensive care<sup>4</sup>. This concerted effort to standardize and enhance the quality of care for patients with CVD and diabetes mellitus is known as the cardiovascular care bundle.

Therefore, the Cardiovascular Care Bundle – Medication Therapy Adherence Clinic (CCB-MTAC) is an ambulatory care service offered by pharmacists at primary care settings that focuses on diabetes and cardiovascular diseases. This will be a multi-disciplinary team (MDT) approach with collaboration between doctors, pharmacists, diabetic educators, dietitians, physiotherapists, psychologists and other healthcare providers to deliver comprehensive medication therapy management in order to enhance patient therapy outcome and safety thus reducing future healthcare cost.



## OBJECTIVES

1. To improve patients' knowledge towards medications, disease(s) and its complications.
2. To increase patients' adherence towards their medications.
3. To optimize the effect of pharmacotherapy and reduce adverse effects resulting from drug use.
4. To identify and prevent drug related problems.
5. To empower patients about proper self-care including self-management, proper use of medications and self-testing.
6. To provide continuity and enhanced patient care through close monitoring and follow-up of patients.

## SCOPE OF SERVICE

1. This service is a teamwork effort consisting of doctors, pharmacists and other relevant health care providers to deliver better healthcare services in order to enhance patient outcomes.
2. CCB-MTAC shall provide the following services:
  - a. In-depth education on medication, self-care activities and disease management
  - b. Pharmacotherapy review including :
    - i. Assessment of patient's understanding of medication, disease and its complications
    - ii. Evaluation of drug therapy and possible adverse effects
    - iii. Assessment of patient's adherence to medication
    - iv. Identification of potential pharmaceutical care issues and suggest appropriate recommendations
  - c. Regular monitoring with close follow-up on planned schedule
3. Activities at the clinic will be carried out according to the suggested workflow (refer Appendix I-IV).

## PHARMACIST REQUIREMENT

1. The pharmacist(s) should be fully trained or has undergone ECHO training in CCB-MTAC [as per the CCB-MTAC Training Module by the Pharmaceutical Services Programme]. The pharmacist should also undergo training in insulin optimization.
2. CCB-MTAC pharmacist must be able to :
  - a. Understand the rational use of patient's medications
  - b. Identify pharmaceutical care issues and solve drug related problems
  - c. Assess and identify suitable validated tools to assist with planning a good pharmaceutical care plan for patients
  - d. Implement new medication regimen for patients to achieve good clinical therapeutic outcome (if needed) after discussion with the prescriber and other healthcare providers

## APPOINTMENT

1. All appointments shall be scheduled by the pharmacists, with consideration of the patient's follow-up appointment at the doctor's clinic.

## OUTCOME MEASURES

1. Each patient should be monitored and assessed during each CCB-MTAC visit. All facilities providing the services shall monitor the following indicators as outcome measurements for the service:
  - a. Understanding of medications
  - b. Adherence of patients towards medications
  - c. Therapeutic outcomes (e.g. glycaemic control, blood pressure control and lipid profile)
  - d. Safety outcomes (e.g. adverse drug reactions, allergic reactions)

# STANDARD OPERATING PROCEDURES

## A. PATIENT ENROLMENT INTO CCB-MTAC (REFER APPENDIX I)

1. Patients who are diagnosed with NCD who fulfill any of the criteria as below, shall be enrolled into CCB-MTAC:
  - a. Patients who have poor understanding on disease or medication use
  - b. Patients who were referred for adherence assessment and have drug-related problems
  - c. Patients in which therapeutic outcomes were not achieved (e.g. due to complex or suboptimal medication regimen)
  - d. Patients who require regular monitoring on medications that require dose adjustment
  - e. Patients who require regular monitoring due to any other reasons as identified by the CCB-MTAC pharmacist (e.g. special population such as older persons, patients with renal impairment)

## B. PATIENT REGISTRATION

1. All patients shall be explained about the CCB-MTAC service before enrolment
2. A registry of all CCB-MTAC patients shall be maintained in the facility
3. A method shall be in place to identify scheduled follow-up patients

## C. PATIENT'S FIRST VISIT TO CCB-MTAC (REFER APPENDIX II)

1. During the initial visit, the pharmacist will perform an initial assessment of the patient. The initial evaluation shall involve:
  - a. Review and/or assess the following:
    - i. Medical/medication history
    - ii. Social/family history
    - iii. Occupational history (e.g. shift work, office work, student etc.)
    - iv. 10-year cardiovascular risk stratification (based on *Rekod Rawatan Pesakit Penyakit Tidak Berjangkit*)
    - v. Medication understanding (e.g. DFIT)
    - vi. Medication adherence (e.g. MyMAAT)
    - vii. Vital signs and laboratory parameters (baseline)

- viii. Diet and lifestyle
    - ix. Allergies (drug and food etc.)
  - b. Medication reconciliation
  - c. Identify pharmaceutical care issues
- 2. During the initial interview, the following will be discussed with the patient:
  - a. CCB-MTAC objectives
  - b. Anticipated benefits to the patients or caregivers
  - c. Therapeutic goals to be achieved by the patient
  - d. Patient's specific drug-related needs

#### D. PATIENT'S SUBSEQUENT VISITS (REFER APPENDIX III)

1. The subsequent visits shall be scheduled at least once every three months, or more frequently according to the initial assessment (to take into consideration patients' needs, their current health status, other clinic visits and medication refill appointments).
2. Evaluation at every visit shall include:
  - a. Review and/or assess the following:
    - i. Therapeutic outcomes (e.g. blood pressure control, glycemic control & lipid control)
    - ii. Medication adherence
    - iii. Medication understanding
    - iv. Disease progression and complications
    - v. Diet and lifestyle
    - vi. Laboratory parameters (e.g. RP, LFT, HbA1c, lipid profile etc.)
    - vii. Safety outcomes (e.g. adverse drug reactions)
  - b. Medication reconciliation
  - c. Identify pharmaceutical care issues
  - d. Review and discuss self-care management e.g. insulin dose adjustment based on SMBG or blood pressure monitoring at home
3. Education on patient empowerment and self-care management should be provided during each visit. Health advice shall be given when necessary.

4. Therapeutic goals for glycaemic, blood pressure and lipid control need to be individualized as per current disease management. Referrals to other healthcare providers for intervention should be done when necessary.
5. Regular discussion with the prescriber should be done pertaining to the patient's condition and treatment.
6. Review appointments until all therapeutic goals are met.

## E. CLINIC OPERATION

1. A designated area with the relevant documents and necessary items shall be made available. The area should have minimal interruptions to ensure patient's privacy and confidentiality.

## F. PATIENT EDUCATION

1. Education of the patient is an important process of ensuring safe and effective therapy.
2. All counselling should be individualized based on the patient's level of understanding and progress.
3. Each patient/caregiver shall be provided with relevant information and/or adherence aids when needed.

## G. PHARMACOTHERAPY REVIEW

1. Pharmacotherapy review is a systematic and structured assessment of a patient medication regime to optimize patient outcome, consisting of these activities:
  - a. Medication Review and Reconciliation :
    - i. Create the most accurate list of all medications taken by the patients, including supplements and over-the-counter medications
    - ii. Compare this list against prescribed medications
    - iii. Evaluate patient's medications to optimize drug therapy
    - iv. Monitor patient's adherence to the plan
    - v. Identify any drug related problem

- vi. Follow up on patient's progress to ensure the achievement of desired outcomes, making modifications to the existing plan if necessary
- b. Identification of pharmaceutical care issues :
  - i. Assess the patient and obtain all information required to ascertain if any intervention or recommendation has to be made.
  - ii. Identify patient-specific health or disease related problems.
- c. Develop/review pharmaceutical care plan :
  - i. Discuss individualized, achievable therapeutic goals with patients
  - ii. Suggest therapeutic alternatives for the patient (if any)
  - iii. Suggest therapeutic lifestyle changes that may help to prevent or solve health or drug related problems.
  - iv. Refer to other healthcare providers when necessary
- d. Pharmacist's recommendation :
  - i. Any relevant pharmaceutical care issues should be documented
  - ii. All recommendations should be discussed with the prescriber when necessary

## H. MONITORING AND EVALUATION

1. Patient's response to pharmacotherapy shall be evaluated through patient interview, laboratory results and information gathered from patient's clinical records.
2. Laboratory tests should be routinely monitored. If patients are suspected to have the following conditions, relevant laboratory tests should be suggested
  - a. Hypoglycemia / hyperglycemia
  - b. Newly started on medications that require specific monitoring (e.g. statin, ACE inhibitor/ARB, SGLT2-I etc.)
  - c. Suspected adverse drug reactions
3. Examples of relevant laboratory tests for patients are as follows:
  - a. Blood Sugar Profile (BS)
  - b. Urine FEME (UFEME)
  - c. Renal Profile (RP)
  - d. Liver Function Test (LFT)

e. Fasting Lipid Profile

I. IMMEDIATE REFERRAL TO PRESCRIBER

1. The following are among the conditions that require immediate referral to the prescriber:
  - a. Suspected severe adverse drug reaction (e.g. rhabdomyolysis, melaena)
  - b. Deranged laboratory results requiring intervention (e.g. hypokalemia, high blood sugar, ALT levels)
  - c. Acute complications of disease

J. MEDICATION DOSAGE ADJUSTMENTS

1. All intervention/dosage adjustment must be discussed with the prescriber.
2. All adjustments must be documented in the patient's clinical records for future reference.

K. DISPENSING

1. Medications may be dispensed during CCB-MTAC to the patient. Counselling relevant to the dispensed medications should be provided.

L. PATIENT'S MISSED APPOINTMENTS (REFER APPENDIX IV)

1. Patients who have defaulted visits should be contacted to reschedule appointments. Any contacts or attempts to contact shall be documented.

M. DISCHARGE CRITERIA

1. Patients will be discharged from CCB-MTAC if they fulfill one of the following criteria:
  - a. Achieved or shown reduction towards individualized targeted therapeutic outcomes\* for two (2) consecutive readings after recruitment into CCB-MTAC with good medication adherence
  - b. Defaulted six (6) months or two (2) consecutive appointments, whichever is longer, despite intervention being done.

- c. Discharged/transferred to other facilities for follow-up
- d. On patient's request

\*Therapeutic outcomes consist of HbA1c, blood pressure and lipid profile

## DOCUMENTATION

1. All activities must be documented accordingly. Information should include :
  - a. Patient's details
  - b. Medical and medication history
  - c. Relevant monitoring parameters
  - d. Patient's medication understanding, knowledge and adherence
  - e. Pharmaceutical care issues

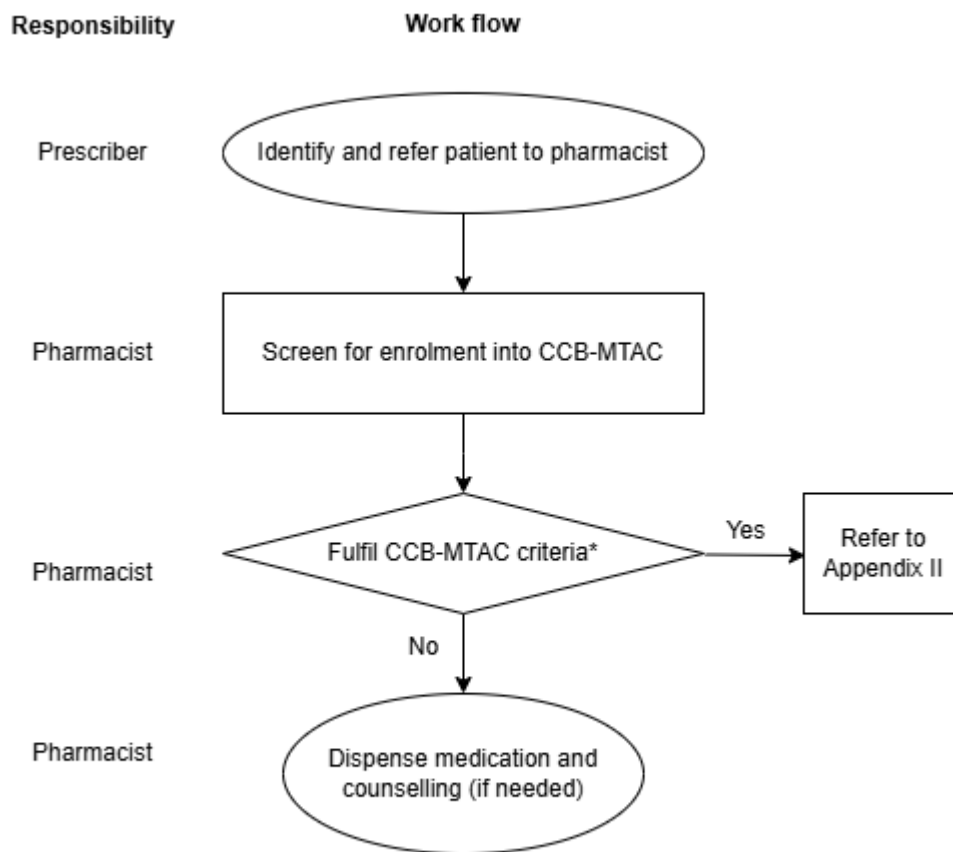


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## APPENDIX I :

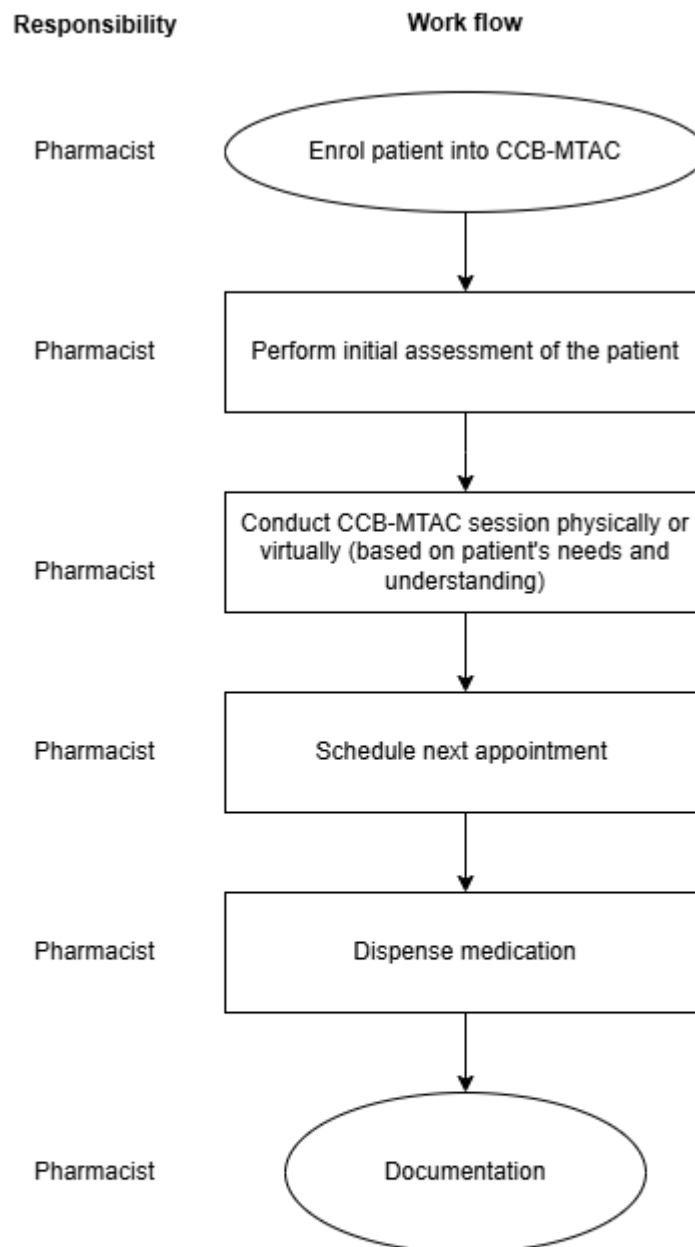
### WORKFLOW FOR PATIENT ENROLMENT INTO CCB-MTAC



\*Refer Section A of Standard Operating Procedures

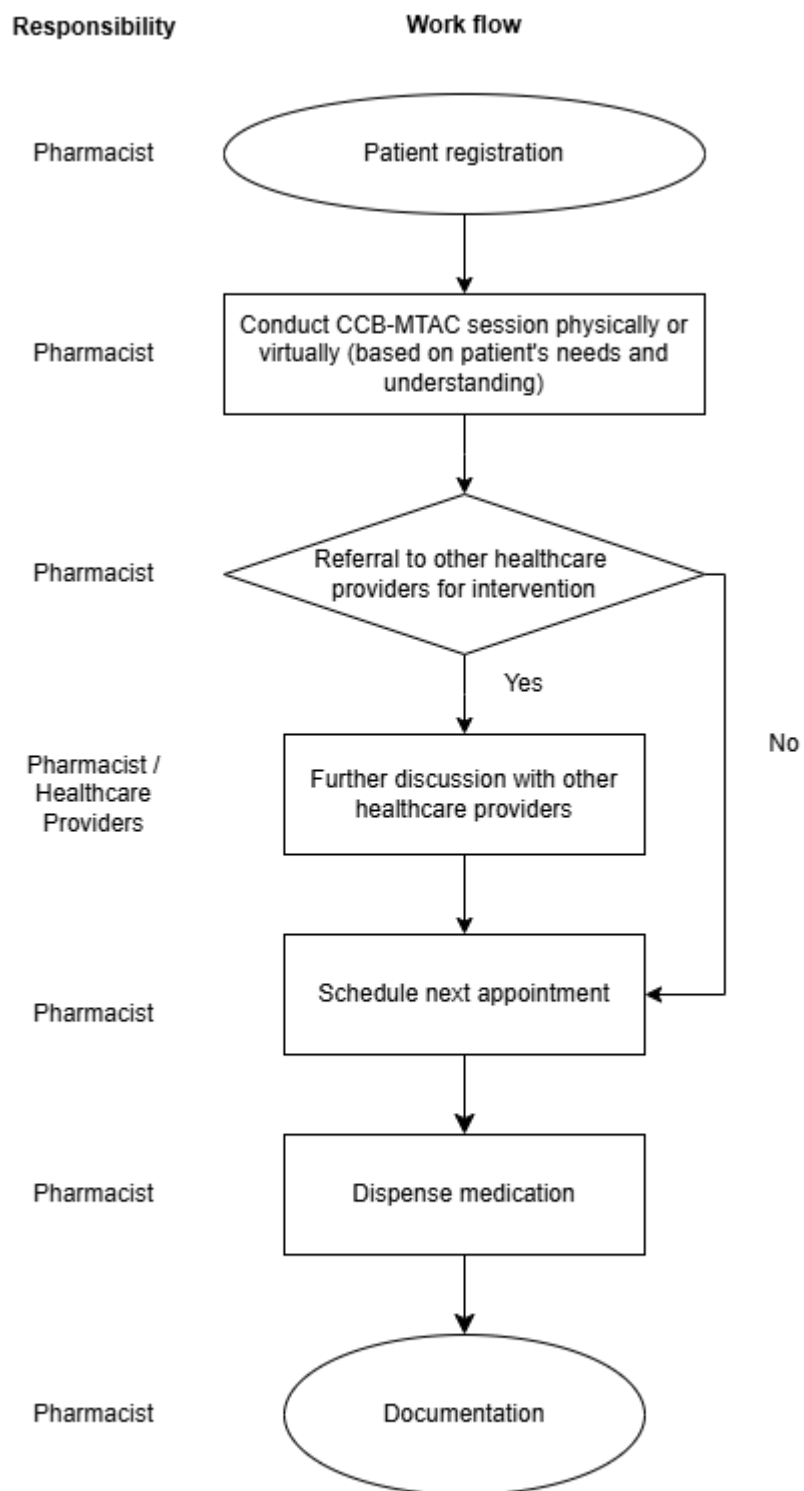
## APPENDIX II :

### WORKFLOW FOR PATIENT'S FIRST VISIT TO CCB-MTAC



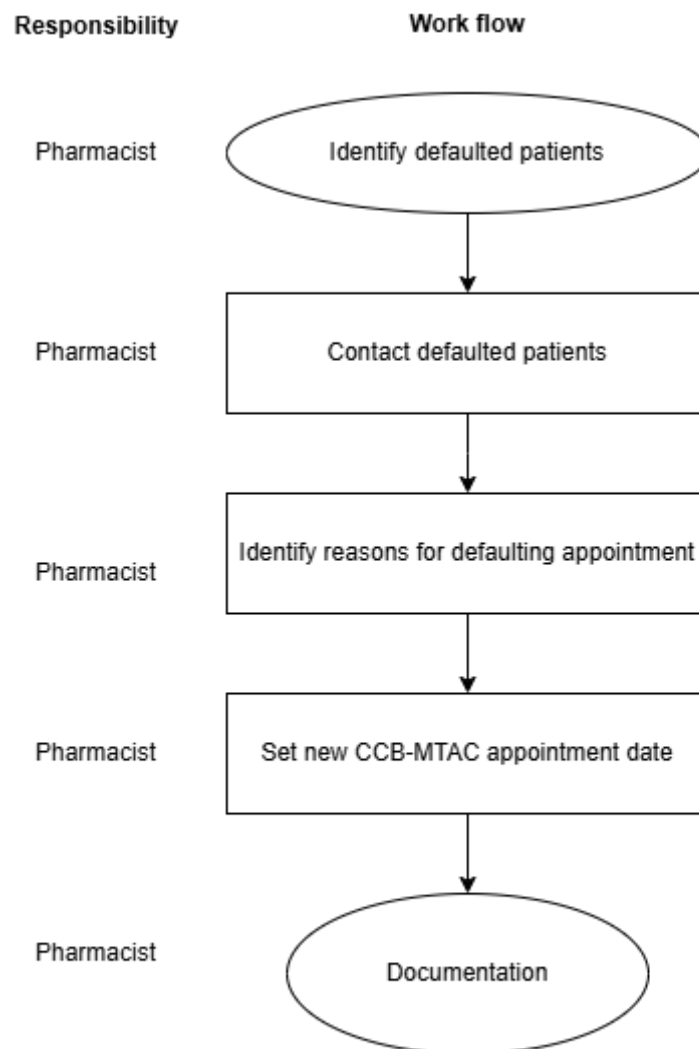
## APPENDIX III :

### WORKFLOW FOR PATIENT'S SUBSEQUENT VISIT TO CCB-MTAC



## APPENDIX IV :

### WORKFLOW FOR PATIENT'S MISSED APOINTMENTS





# **CARDIOVASCULAR CARE BUNDLE MEDICATION THERAPY ADHERENCE CLINIC (CCB-MTAC) PROTOCOL SECOND EDITION**

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