ACADEMIC PUBLICATION SET

VIEN GUT MODEL

Integrated Outpatient Care for Complex Chronic Multimorbidity

Part B — Operational Model

Vien Gut Model — Academic Publication Set

DOCUMENT B.1
THE FIRST CLINICAL ENCOUNTER

Activating the Integrated Operating System — Routing to the Clinical Conductor, Multidisciplinary Team and Safety Referral Valve

Vien Gut Model — Academic Publication Set
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Operational Summary

This document describes the operational design of the first clinical encounter within the Vien Gut Model.

The first encounter is not a symptom-recording session — it is the activation point for the entire integrated operating system.

Overarching goal: comprehensive examination and diagnosis, construction of an integrated treatment plan, and establishment of a long-term management foundation.

The first clinical encounter in the Vien Gut Model must produce an integrated clinical picture of the entire patient — deep enough to identify the principal disease and active comorbidities; the degree of target-organ damage; the pathological spirals driving clinical deterioration; and the patient's position relative to guideline coverage. From there, the Clinical Conductor can activate an integrated treatment plan, assign the multidisciplinary team, and establish the appropriate longitudinal follow-up rhythm from the outset.

CORE OPERATING ARCHITECTURE

WHAT (Guideline): Treatment objectives and principles benchmarked against up-to-date international guidelines by specialty.

HOW (Operating layer): Organisation of examination, diagnosis, risk stratification, multidisciplinary coordination, polypharmacy governance and longitudinal follow-up.

DATA-to-operate: The minimum dataset sufficient to identify target-organ damage, pathological spirals, degree of clinical decline and the therapeutic window of opportunity.

1. Problem Statement

The core treatment targets of the Vien Gut Model — crystal-free status in complicated gout; dialysis deferral in end-stage chronic kidney disease; reduction of cardiovascular decompensation; re-compensation of liver cirrhosis; and control of the severe phase of multiple other chronic diseases — can only be meaningfully pursued when the patient is approached through the WHAT–HOW–DATA-to-operate framework.

These targets are therefore not set after several fragmented consultations but must be initiated at the very first encounter. This encounter does not merely record symptoms or order a few baseline tests; it must serve as the activation point for the entire integrated operating system.

This approach is consistent with NICE guidance on multimorbidity: reduce treatment burden, avoid fragmented care, and build an individualised management plan with a clearly designated coordinator for patients with multiple concurrent chronic conditions.

✓ **GUIDELINE PROVIDES (WHAT)** Source: NICE NG56 [1]; ACR 2020 [3]; KDIGO 2024 [2]

✓ GUIDELINE PROVIDES (WHAT)	+ VIEN GUT ADDS (HOW)
Set treatment targets per single disease. Recommend periodic monitoring without designing a specific operational mechanism. No guidance on multidisciplinary coordination or polypharmacy governance in complex outpatient settings.	Activate the integrated operating system from the very first encounter. Establish an integrated clinical picture across all four target-organ axes. Risk-stratify T1–T4 and assign the Clinical Conductor from the outset. Build an individualised treatment plan that is operationally feasible in practice.

Real-world Illustration — Case DTH: Identifying a Hidden Disease Cause at the First Encounter

The first encounter at Vien Gut (04 Jan 2021) detected F4 cirrhosis Child–Pugh B7, decompensated stage — with the aetiology identified as alcohol-related liver disease (ALD). Evidence: GGT 397.1 U/L (>7× typical ALD threshold) · AST/ALT >2 · HBsAg negative · Anti-HCV negative.

None of the five previous healthcare facilities — over several years of follow-up — had diagnosed ALD, initiated alcohol cessation intervention, or provided structured nutritional counselling. The patient continued drinking; the disease continued to progress.

Correct identification of the cause at the first encounter opened the entire intervention chain: complete alcohol cessation, nutritional intervention, and a phased Fibroscan monitoring plan. Results after 4 years: GGT 397.1→87.1 U/L · Fibroscan 23→11 kPa (F4→F3) · grade III splenomegaly fully resolved.

→ This is a concrete illustration of the B.1 principle: the integrated clinical picture must include disease causes and progression factors — not just a symptom list.

2. Overarching Goal of the First Clinical Encounter

The overarching goal of the first clinical encounter in a patient with complex chronic multimorbidity is to conduct a comprehensive examination and diagnosis of all diseases the patient carries; simultaneously assess the severity of each disease, the degree of target-organ damage; identify the complex pathological spirals among interacting diseases; determine the causes of disease and the factors driving disease progression; and thereby stratify the patient by treatment-safety level in order to select the appropriate management strategy from the outset.

In other words, the first encounter must produce an integrated clinical picture. That picture must be deep enough to identify:

- • Which disease is the principal disease and which comorbidities are driving the clinical course
- • Which target organs have been damaged and to what degree
- • Which disease–disease and drug–disease interactions are forming spirals of clinical decline
- • Which real-life factors continue to worsen the disease (diet, lifestyle, corticosteroid dependence, poor adherence, prior fragmented treatment)

This approach is also consistent with NICE, which emphasises assessing disease burden, treatment burden, polypharmacy and the patient's real-life priorities, rather than simply stacking single-disease guidelines.

INTEGRATED CLINICAL PICTURE — OPERATIONAL DEFINITION

A mandatory product of the first encounter. Includes: a complete disease list classifying principal disease/comorbidities; degree of target-organ damage; active pathological spirals; T1–T4 risk stratification; the patient's position relative to guideline coverage; and an initial integrated treatment plan.

Not a test list — it is the foundation for integrated clinical decision-making by the Clinical Conductor.

3. Three-Zone Patient-Response Model (Guideline Coverage — A.4 C-18)

The Vien Gut Model is designed to respond simultaneously to three patient zones:

Zone 1 — Within single-disease guideline coverage.

The clinical presentation still reasonably fits current single-disease recommendations. Single-disease guidelines can be applied directly. HOW organises guideline-compliant implementation.

Zone 2 — Borderline zone.

The patient begins to exhibit multimorbidity, polypharmacy, organ-function decline or conflicting treatment targets. Linear application of single-disease guidelines is no longer sufficient. HOW must resolve conflicts and coordinate multidisciplinary care.

Zone 3 — Beyond guideline coverage, still meeting outpatient criteria.

The patient no longer fits neatly within the 'clean' populations of single-disease guidelines, yet has not crossed the threshold mandating inpatient or emergency admission. A window of opportunity remains if HOW is robust enough to operate safely.

> **IMPORTANT NOTE ON ZONE 3**
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> "Beyond guideline coverage" does NOT mean "outside the standard of care." It means: the patient has moved beyond the simple zone of single-disease guidelines and therefore needs stronger HOW to maintain the outpatient safety margin. If that margin is exceeded, the model does not attempt to retain the patient but must activate the safety referral valve immediately.
>
> It means: the patient has moved beyond the simple zone of single-disease guidelines, and therefore needs stronger HOW to maintain outpatient safety margins.
>
> If the patient exceeds that safety margin, the model does not attempt to retain them but must activate the safety referral valve immediately.

4. The First Encounter as a Comprehensive Examination — Four Verification Axes, Not Four Mandatory Investigation Packages

The first clinical encounter in the Vien Gut Model must be designed as a clinically directed comprehensive examination — closer in spirit to an in-depth general health check-up than to a fixed-protocol specialty work-up. Patients arrive at Vien Gut carrying any combination of chronic diseases. The Clinical Conductor must see the whole patient — not only look through four pre-set windows.

> Foundational principle: The four verification axes are the model's outcome-measurement framework — not a mandatory disease list for every patient. An axis is activated only when there is clear clinical justification. Any disease may emerge during the first encounter — the four axes are the model's priority verification targets, not exclusion boundaries for other diseases.

Tier 1 — Invariant tasks of every first encounter: detecting survival-threatening factors and the whole-patient picture.

Regardless of the presenting complaint and the number of disease axes, the first encounter must accomplish the following:

- Identify factors that may threaten survival immediately or in the short term — regardless of which axis they belong to.
- Build a complete disease list, classifying principal disease and comorbidities.
- Identify active pathological spirals — disease–disease and drug–disease interactions.
- Risk-stratify T1–T4 based on the whole picture, not on a single axis alone.
- Determine enabling conditions and adherence barriers for this specific patient.

This is a tier that cannot be bypassed — and is not limited by the four verification axes. Without securing this tier, every subsequent advanced treatment plan is built on an unstable foundation.

Tier 2 — Four verification axes: long-term outcome-measurement targets of the model, activated on clinical indication

The four axes — gout (crystal-free), chronic kidney disease (dialysis deferral), cardiovascular disease (decompensation reduction), chronic liver disease (cirrhosis recompensation) — are the four multi-centre verification targets that the Vien Gut Model has built evidence for over 18 years of integrated clinical practice. They constitute the model's outcome-measurement framework — not a mandatory disease list for every patient.

An axis is activated for advanced investigation only when the patient has a clear clinical reason — the disease has been diagnosed, typical symptoms are present, or abnormalities appear on minimum screening. Patients without chronic liver disease do not open the liver axis. Patients without gout do not open the crystal axis. But when an axis is activated, the full current guideline for that axis must be applied.

5. Five Ordering Principles at the First Clinical Encounter

Principle 1: Not every patient is examined the same way.

The first encounter must still include a minimum core sufficient to ensure cardiac–hepatic–renal safety and identify system-protecting operating conditions; but advanced investigations must follow each individual patient's diseases, symptoms and risk profile.

Principle 2: Every advanced paraclinical order must follow the current guideline.

The gout branch follows gout and gout-imaging guidelines; the renal branch follows CKD guidelines; the cardiac branch follows cardiovascular, heart-failure and chest-pain guidelines; the hepatic branch follows chronic liver disease, cirrhosis and hepatic decompensation guidelines. WHAT is not replaced. HOW only organises how WHAT is applied to the right patient, at the right time, at the right safety level.

Principle 3: The minimum paraclinical core is a system-safety core.

Not a core that examines all four axes. It exists to avoid missing major break points in the heart, liver, kidneys, anaemia, metabolism, glucocorticoid exposure and other operational risks.

Principle 4: Every test must have a clear management branch.

A test should only be ordered when the system knows what to do if the result is abnormal: who is responsible, what is the action threshold, and what is the next management step.

Principle 5: Neither over-ordering nor under-ordering.

Over-ordering: increased cost, inconvenience, prolonged waiting time, burden on patient and system. Under-ordering: missed target-organ damage, missed windows of opportunity, slower and more dangerous subsequent treatment.

6. Minimum Paraclinical Core of the First Clinical Encounter

> The minimum paraclinical core is the dataset sufficient to ensure operational safety — not a "general screening package." Compatible with NICE (reducing fragmented care, supporting individualised planning) and KDIGO 2024 (eGFR + urinary albumin as the two core renal-risk axes) [1][2].
>
> Consistent with NICE (reducing fragmented care, supporting individualised plans) and KDIGO 2024 (eGFR + urine albumin as the two core axes for renal risk assessment) [1][2].

General Safety Core	Risk-Adjusted Additions	Advanced Branch (When Activated)
• Complete blood count (CBC) • Creatinine, Urea, eGFR • Basic electrolytes (Na, K, Cl, HCO_3) • Complete urinalysis • AST, ALT, Bilirubin, Albumin • Blood pressure • Full medication review (structured) • Glucocorticoid exposure screening	• Fasting glucose / HbA1c (suspected DM or metabolic disorder) • PT/INR (suspected severe liver disease) • Serum uric acid (suspected/history of gout) • 12-lead ECG (CV risk, CKD, DM, dyspnoea, chest pain) • Proteinuria / Albuminuria (if eGFR abnormal or CKD risk)	• Joint US / DECT — when gout axis activated • Renal US — when renal axis activated or core abnormal • TTE + chest X-ray — when heart failure suspected/established • Full abdominal US — when hepatic axis activated • Liver/renal elastography — advanced tier, not universal • Endocrine tests (HPA axis) — only when genuine clinical suspicion

Key point: serum uric acid alone does not mean every patient enters the advanced gout branch. EULAR 2018 states clearly that gout diagnosis should not rely on hyperuricaemia alone; gout imaging is indicated only to support the diagnosis or when the presentation is atypical.

ECG is a minimum safety tool of value for the cardiovascular axis, but does not mean every patient requires immediate echocardiography. TTE and chest X-ray are required in the initial assessment only when heart failure is suspected or established per AHA/ACC/HFSA 2022. For low-risk chest pain, AHA/ACC 2021 emphasises that routine urgent testing is not required.

7. Branch-Opening Mechanism by Axis

The first encounter operates through three branch-opening mechanisms:

Trigger	Condition	Action	SLA	Escalation
Registered presenting complaint	Patient presents for severe gout, CKD, ascites, heart failure or cardiovascular symptoms	Open advanced branch by presenting complaint; the cardiac–hepatic–renal safety core remains mandatory	**Day 1**	Clinical Conductor reviews paraclinical plan immediately
Typical symptoms / clinical signs	Dyspnoea, oedema, crackles, chest pain, palpitations, syncope, ascites, jaundice, oliguria, nocturia, recurrent arthralgia, tophi…	Open corresponding branch within the encounter; do not wait until the encounter is over	**Within encounter**	Activate T3 or T4 stratification if needed
Seriously abnormal screening results	Severe renal failure, electrolyte disturbance, signs of hepatic decompensation, severe anaemia, high-risk ECG abnormality, or any finding suggesting the outpatient safety margin has been exceeded	Switch from routine encounter mode to structured response mode; reassess stratification immediately	**Immediate**	Activate safety referral valve if T4 criteria are met

Real-world Illustration — Case DTH: Tier T4 Activated from Core Screening Results

On 04/01/2021, Viện Gút performed the minimum paraclinical core per protocol B.1. Results returned multiple severe abnormalities simultaneously: K^+ 5.6 mmol/L (hyperkalaemia) · Hb 5.2 g/dL (very severe anaemia) · Cortisol 2.1 µg/dL + ACTH 1.3 pg/mL (severe secondary adrenal insufficiency — GIAI).

None of the 5 healthcare facilities the patient had visited — including a tertiary hospital 5 days earlier — had detected these abnormalities. Reason: no facility performed a structured system-safety minimum paraclinical core per B.1.

These screening results triggered T4 activation per the mechanism described in the Section 7 table. The Clinical Conductor confirmed the decision: activate the safety referral valve concurrently with emergency prescription adjustment and initiate structured outpatient monitoring.

→ Full data available in: DTH Case Report v5.4 CARE (Viện Gút, 2026). Evidence level: Level IV — proof-of-concept.

Three Real-world Cases — Illustrating the Branch-Opening Mechanism (Section 7)

Feature	Case DTH — Male, 58 years	Case LTAH — Female, 63 years	Case LAU — Male, 51 years
Initial presentation	Polyarticular tophaceous gout + CKD G5 + Cirrhosis F4 decompensated + Severe anaemia + GIAI	CKD G5 eGFR 6 + DM + Cirrhosis F3 + CVD — RRT threshold	Polyarticular tophaceous gout + Heart failure EF 37% + AKI (eGFR 28) + DM + Cushing
Branch-opening trigger	Core paraclinical results returned multiple simultaneous abnormalities: K^+ 5.6 / Hb 5.2 / Cortisol 2.1	Patient arrived after Facility-3 ordered RRT — creatinine 635 μmol/L	AKI eGFR 28 at visit 2 — visit 1 (4 months earlier) left untreated
Prior facilities missed	5 facilities / 6 months — no GIAI diagnosis, no urate-lowering, no nutrition	3 facilities / 15 days — 2/11 ICD-10 (18%), no discharge prescription	Tertiary hospital — dangerous drug combination: colchicine + celecoxib on CKD
B.1 stratification	T4 → safety referral valve activated + parallel outpatient	T4 (RRT threshold) → maintained outpatient, 7-day consecutive follow-up	T3 → T1 after regimen adjustment, dangerous drugs discontinued
B.1 principle demonstrated	Hidden GIAI identified at first encounter → full HPA-axis intervention chain unlocked	7-day window: eGFR 6→11 after integrated regimen — acute RRT averted	Missed window of 4 months (visit 1 untreated) → AKI occurred at visit 2

8. From Diagnosis to T1–T4 Risk Stratification

> T1–T4 risk stratification is a mandatory product of the first encounter. It is not merely a risk-management tool — it is the mechanism that guarantees the model's core principle: never miss an emergency, but also never deprive a patient of an outpatient opportunity when a window of opportunity still exists.
>
> It is not merely a risk-management tool — it is the mechanism ensuring the model's core principle: no emergency is missed, yet no patient who still has a window of opportunity is deprived of outpatient care.

Tier	Patient Group	Clinical Features	Management	Activation Threshold
T1–T2	**Stable / moderate — structured outpatient**	Complex multimorbidity, including borderline or beyond-guideline zones; no signs of vital-organ decompensation; window of opportunity for treatment still open	Activate integrated treatment plan; assign Clinical Conductor; establish longitudinal follow-up rhythm	No signs of T3 or T4
T3	**Severe / unstable — same-day response required**	Acute symptoms or notable paraclinical abnormalities; not immediately life-threatening but requires structured same-day response	Same-day management; expanded assessment; intensified monitoring; activate MDT immediately if needed	Clinically or paraclinically significant abnormality; does not meet T4 criteria
T4	**Beyond outpatient safety margin**	Life-threatening signs, acute vital-organ decompensation; not appropriate to continue routine outpatient encounter	Activate emergency referral valve immediately; prioritise vital-organ protection; discontinue routine outpatient process	Respiratory failure, circulatory failure, acute hepatic decompensation, dangerous hyperkalaemia, high-risk arrhythmia, or any immediately life-threatening sign

Real-world Illustration — T1–T4 Risk Stratification: 3-Case Comparison

Feature	Case DTH — Male, 58 years	Case LTAH — Female, 63	Case LAU — Male, 51 years

		years	
Assigned tier	T4 → safety referral valve activated immediately	T4 → maintained outpatient with weekly monitoring	T3 → transitioned to T1 after regimen adjustment
Critical abnormalities at visit 1	K^+ 5.6 · Hb 5.2 · Cortisol 2.1 µg/dL	eGFR ~6 · Creatinine 635 · Urea 38.7 mmol/L	eGFR 28 · Colchicine + Celecoxib in use on CKD
Reason for not immediate hospitalisation	Patient refused — bidirectional valve activated, parallel outpatient	Patient refused RRT at Facility-3 — came directly to Viện Gút	Patient still within outpatient window — dangerous drugs discontinued, close monitoring
Outcome after tier management	Stable outpatient for 4 years — Fibroscan F4→F3, ascites fully resolved	eGFR 6→11 within 7 days — acute RRT averted. Follow-up 77.9 months	eGFR recovered 28→76–84 mL/min — Fibroscan F3→F0 over 4.5 years

9. Routing All Workflows to the Clinical Conductor

All data from reception, history-taking, physical examination, core paraclinical tests, advanced branches, adherence assessment and patient education must be routed to the Clinical Conductor — a CME-updated general internist serving as the clinical conductor (orchestra-leader) of care.

The Clinical Conductor is responsible for: examination–diagnosis–treatment ordering; multi-axis target coordination; guideline-conflict resolution; polypharmacy governance; determining the longitudinal follow-up rhythm; and activating the safety valve when required.

STRATEGIC ROLE OF THE CLINICAL CONDUCTOR

- What phase is the patient in, and which axis is the priority vital-organ axis?
- Which is the principal disease, which comorbidity is driving the clinical course?
- Which spiral is causing clinical decline? Is the window of opportunity still open or lost?
- Should the patient remain outpatient, have follow-up intensified, or be referred?
- Which guideline-coverage zone should be applied (Zone 1, 2 or 3)?

In other words, the Clinical Conductor is where all workflows converge to transform “knowing a lot of data” into “making integrated clinical decisions.” This role of “one person responsible for coordinating care” is directly consistent with NICE guidance on multimorbidity management.

10. The Multidisciplinary Team as a Sensor–Response Chain

The MDT is not a loosely supportive group. It must be organised as a sensor–response chain with clear role assignment, bidirectional consultation and shared accountability for outpatient safety.

PATIENT

- Understands the integrated treatment plan from the first encounter
- Knows the name and role of the Clinical Conductor and each team member
- Can identify warning signs requiring urgent contact outside scheduled follow-up
- Adheres to the longitudinal follow-up schedule and testing

FAMILY & CARER

- Supports symptom monitoring and treatment adherence at home
- Recognises abnormal signs and knows when to contact the team
- Participates in the long-term outpatient care plan

rhythm	

Common barriers in this context

→ Complex polypharmacy — clinical pharmacist needed from the first encounter
→ Limited disease literacy — structured education branch required
→ Prior fragmented treatment — trust-building and plan reorientation needed

Key roles in the sensor–response chain:

- • Imaging physician: transforms images into a longitudinal structure–function monitoring tool.
- • Laboratory staff: transforms tests into a radar for break-point detection and threshold-drift trends.
- • Clinical pharmacist: polypharmacy safety gatekeeper, drug–drug interaction review, medication counselling.
- • Nursing / outpatient monitoring staff: checklist execution, critical data collection, red-signal detection.
- • Outpatient care worker: longitudinal home-based follow-up, early detection of decline phases.
- • Visual-medicine / media staff: standardising before–after photo–video as operational data, improving adherence and reinforcing trust.
- • Data/ops support unit: time-series data aggregation, trend dashboards, decision-log and audit-trail support.

11. HOW and DATA-to-operate at the First Encounter

HOW in the Vien Gut Model is not designed to replace the physician. HOW organises workflows, priority sequences, action thresholds, role assignments and safety valves so that the system does not operate on intuition or through disconnected cross-sectional slices.

DATA-to-operate is not “collect as much data as possible.” It is the minimum dataset sufficient for action — enabling identification of target-organ damage, pathological spirals, severity, the trajectory of decline, safety margins and whether the window of opportunity is still open or has been lost.

As a result, the first clinical encounter does not stop at “knowing what the diseases are,” but becomes the launch point of an integrated, individualised, and operationally viable treatment plan. This interpretation resonates with NICE’s emphasis on optimising quality of life, reducing treatment burden and building a care plan that is truly usable in practice.

12. Comparison with Fragmented and Cross-Sectional Care Models

> This section is a fixed component of every Part B document.
>
> Purpose: to place HOW and DATA-to-operate of the Vien Gut Model in the context of international evidence on the limitations of fragmented and cross-sectional care.

Fragmented care and cross-sectional (single-disease encounter) treatment are the two most prevalent models in current outpatient practice in developing health systems. In the fragmented model, the multimorbid patient sees multiple specialists sequentially — each addressing one disease, none seeing the whole picture. In the cross-sectional model, the patient is examined and prescribed per discrete time-slice, with no structured longitudinal follow-up and no designated care coordinator.

12.1 International Evidence on the Limitations of Fragmented Care

NICE NG56 states clearly: most recommendations in single-disease guidelines were developed from clinical trials that excluded multimorbid patients; trial results may be less applicable and treatment benefits may be more limited in multimorbid populations. Simultaneously applying multiple single-disease guidelines to a single patient leads to rapidly accumulating treatment burden with no prioritisation guidance.

Hughes et al. (2013) analysed five NICE guidelines and showed that strictly following single-disease guidelines for a patient with just two concurrent chronic conditions would create overwhelming treatment burden even at mild-to-moderate severity. Comorbidity and treatment adherence were considered very unevenly across these guidelines.

Muth et al. (2019), in a systematic review of multimorbidity and polypharmacy care guidelines, concluded: over a decade ago, the medical community recognised that applying single-disease guidelines to multimorbid patients is unfeasible and potentially harmful; yet clinical decision support for this patient group remains critically deficient.

A large-scale international systematic review (Jiang et al., 2023), analysing data from 4.7 million Danish citizens, confirmed: fragmented care in multimorbid patients is significantly associated with increased potentially inappropriate medication and increased all-cause mortality. Care fragmentation is not merely an issue of patient experience — it is a measurable clinical risk factor.potentially inappropriate medication and increased all-cause mortality. Care fragmentation is not merely an issue of patient experience — it is a measurable clinical risk factor.

Jiang et al. (2023) — the first systematic review of care fragmentation and chronic-disease outcomes — concluded: fragmented care is strongly associated with increased unplanned emergency visits, increased diagnostic test utilisation, and increased healthcare costs; while case-management and coordinated-care models have demonstrated the ability to overcome this fragmentation.

In the LMIC and Asian context, a qualitative study in China (Mei et al., 2025) found: multimorbid patients in fragmented health systems receive disjointed self-management guidance, excessive reliance on medication, and a lack of structured education and support; compartmentalised care systems impede meaningful physician–patient relationships and substantive shared decision-making.

The JA-CHRODIS international consensus (Onder et al., 2016) — building a pan-European multimorbidity care framework — affirmed: due to the current single-disease-oriented approach, multimorbid patients face highly fragmented care — leading to ineffective, inefficacious and potentially harmful clinical interventions. The framework mandates that each patient has a clearly designated family physician and nurse to ensure care continuity.

12.2 Specific Break Points of Fragmented Care at the First Encounter

In the fragmented model, the first encounter typically records only the chief complaint of the registered disease. The gout patient is examined for gout; the CKD patient is counselled about CKD; the heart-failure patient is evaluated for heart failure. No one asks: how are these diseases interacting? Who is responsible for the overall picture? Which spiral is driving clinical decline? Is the gout treatment regimen safe when eGFR is at 28?

WHAT–HOW Gap Analysis Source: NICE NG56 [1]; Hughes 2013 [10]; Muth 2019 [11]; JA-CHRODIS 2016 [12]

✓ GUIDELINE PROVIDES (WHAT)	+ VIEN GUT ADDS (HOW)
Examines and prescribes per individual disease at each encounter.	The first encounter produces an integrated clinical picture — covering the entire clinical landscape.
No single person responsible for coordinating the entire treatment plan.	A Clinical Conductor is assigned immediately — one person responsible for end-to-end coordination.
Single-disease guidelines applied simultaneously	Structured guideline conflict resolution following vital-organ

without resolving target conflicts. No structured longitudinal follow-up — only ad-hoc visits when the patient returns. No mechanism for early break-point detection and structured escalation.	priority principles. Longitudinal follow-up rhythm established from the first encounter, not waiting for the patient to return. MDT sensor–response chain for early detection and structured escalation.

12.3 Measurable Clinical Consequences of Fragmented Care

International data show that fragmented and cross-sectional care models produce measurable clinical consequences: increased risk of potentially inappropriate medication due to absent structured polypharmacy review; increased unplanned emergency admissions and prolonged hospital stays; increased healthcare costs from test duplication, lack of coordination and delayed break-point management; increased treatment burden for patients and families — especially in the ≥10-medication polypharmacy group; reduced quality of life, increased disability and increased all-cause mortality in multimorbid patients; lost early-intervention windows of opportunity when break points are not identified in time.

- Increased risk of potentially inappropriate medication due to lack of structured polypharmacy interaction review.
- Increased unplanned emergency hospitalisations and prolonged hospital stays.
- Increased healthcare costs due to duplicate testing, lack of coordination and delayed break-point management.
- Increased treatment burden for patients and families — especially in the ≥10-drug polypharmacy group.
- Reduced quality of life, increased disability and increased all-cause mortality in multimorbid patients.
- Missed windows of opportunity for early intervention — when break points are not identified in time.

12.4 The Vien Gut Model's Response

The Vien Gut Model does not deny the role of single-disease guidelines — WHAT is followed in full. What the model adds is the HOW and DATA-to-operate layer: organising the first encounter as a system activation point rather than a disconnected slice; assigning the Clinical Conductor as the through-line coordinator rather than one more specialist added to the fragmented chain; and establishing longitudinal follow-up rhythm from the outset rather than waiting for the patient to return when already worse.

This is precisely the gap that JA-CHRODIS (2016) and NICE NG56 identify as a policy priority: the need for integrated, individualised care models with a clearly designated coordinator for multimorbid patients — particularly in LMIC settings where healthcare resources are limited and the risk of fragmentation is highest.

13. Safety Referral Valve from the Very First Encounter

If the first encounter reveals that the patient is in a life-threatening condition or has exceeded the outpatient safety margin, the system must not continue processing the visit as a routine encounter. The safety referral valve must be activated immediately.

Trigger	Condition	Action	SLA	Escalation
T4 — detected during history-taking/clinical examination	Dangerous vital signs, acute organ decompensation, life-threatening symptoms	Clinical Conductor confirms referral decision; prioritises vital-organ protection; stops routine outpatient process	**Immediately**	Emergency 115 or transfer to higher-level hospital per pathway
T4 — detected via paraclinical results	Core results returning dangerous abnormalities: severe hyperkalaemia, acute renal failure, high-risk arrhythmia, severe	Laboratory prioritises critical results; Pharmacist reviews drugs and risks; Nursing organises emergency triage	**≤ 30 min**	Activate emergency safety referral valve

	coagulopathy…			
Post-inpatient reintegration preparation	Patient recently discharged — belongs to the group that triggered the safety referral valve from Viện Gút	Outpatient care unit prepares 0–30 day reintegration plan; Data/ops support completes decision log and handover dataset	**0–30 days**	Clinical Conductor reviews plan and updates stratification

SAFETY REFERRAL VALVE — NOT A FAILURE OF OUTPATIENT CARE

The safety referral valve is a mandatory component of safe outpatient care.

Only when a well-functioning safety valve is in place can the system safely retain outpatient treatment for cases that still have a window of opportunity.

On the cardiac axis: the 2021 chest pain guideline requires a standardised pathway to rapidly identify life-threatening situations [6].

On the renal and hepatic axes: KDIGO and EASL both emphasise risk stratification and early decompensation detection to escalate response in time [2][8].

Real-world Illustration — Case DTH: Safety Referral Valve Does Not Sever Outpatient Continuity

Case DTH illustrates a rare situation: Viện Gút issued a hospital referral letter to the tertiary hospital (CR) while simultaneously maintaining outpatient follow-up. This decision is not contradictory — it is the bidirectional safety referral valve design of B.1.

Viện Gút issued a referral letter with a full report to CR, while simultaneously: training the patient per document B.4, arranging accommodation near Viện Gút (Dĩ An, Bình Dương — 20 km away), and establishing a structured outpatient follow-up rhythm.

In practice: the patient did not go to CR but stayed with Viện Gút. That decision by the patient — not random — was a direct result of patient education and trust-building established at the first encounter.

Notable system limitation: to date Viện Gút still lacks electronic interoperability with higher-level hospitals. The safety referral valve depends on the patient carrying documents and records — this is a HOW limitation to be noted for the infrastructure improvement roadmap.

→ Full data available in: DTH Case Report v5.4 CARE (Viện Gút, 2026). Evidence level: Level IV — proof-of-concept.

Three Cases — Bidirectional Safety Referral Valve: When and How

Feature	Case DTH — Male, 58 years	Case LTAH — Female, 63 years	Case LAU — Male, 51 years
Type of safety referral valve	Activated from first encounter: K^+ 5.6 — bidirectional valve (CR + parallel outpatient)	Activated after 77.9 months: sustained eGFR 6.36 — bidirectional valve pre-designed	No valve needed — internal regimen adjustment, dangerous drugs discontinued
Activation timing	Visit 1 (04/01/2021) — at the very first encounter	Visit 253 (30/12/2025) — after 77.9 months of structured outpatient care	Not activated — T3 stratification, resolved internally
Bidirectional valve in operation	Viện Gút sent report to CR + continued outpatient. Patient chose to stay with Viện Gút	Referred to nephrology + continued multimorbidity monitoring at Viện Gút	Fully retained in outpatient care — no referral needed
Lesson for B.1	Valve does not sever continuity — outpatient continues in parallel with specialist inpatient care	Valve is a pre-designed safety mechanism — not a treatment failure	Correct stratification from the start avoids the valve — conflict resolved on-site
Data source	DTH Case Report v5.4 CARE (Viện Gút, 2026) — Level IV	LTAH Case Report Academic v3 (Viện Gút, 2026) — Level IV	LAU Case Report Academic (Viện Gút, 2026) — Level IV

13A. Patient Education and Treatment Discipline Assessment

13A.1 Real-world Context — An Environment That Is Not Idealised

The Vien Gut Model was built and tested under real-world conditions — not in an idealised environment of patient cooperation. This is a fundamental distinction from intervention models designed on carefully screened research populations.

Over 18 years of integrated practice, Vien Gut has routinely faced adherence barriers including: low or unstable trust (most physicians at other facilities — including rheumatology specialists — tell patients that gout is incurable, directly contradicting the consistent principle of 18 international guidelines over 20 years); prolonged flare recurrence during early treatment (the "flare paradox"); habitual over-the-counter purchase of analgesics and corticosteroids; missed follow-up appointments due to compounding factors (distance, economics, a false sense of stability, conflicting information from other physicians); and a lack of consensus within the domestic medical community.

- Persistent flares during early treatment: in patients with severe complicated gout, acute arthritis flares may continue for 1–2 years even on correct therapy. This is a documented phenomenon (flare paradox) but unprepared patients lose trust and abandon treatment.
- Habit of self-purchasing analgesics and over-the-counter corticosteroids: widespread among complicated gout patients with long-term use; creates a dependency spiral and masks true clinical signals.
- Delayed follow-up due to compounding reasons: geographic distance (case LTAH: ~545 km), economic pressure, work, feeling temporarily stable, or loss of trust after contradictory advice from other physicians. All three Viện Gút cases documented serious interruptions leading to emergency referral valve activation.
- Lack of domestic medical community consensus: Viện Gút deliberately chose not to engage in promotional communication over 18 years, focusing on building and verifying the model. The consequence is that the domestic medical community is largely unaware of the model, leading patients to receive contradictory information from physicians at other facilities.

Why has Viện Gút not yet organised conferences or symposia?

The systemic gaps identified by Viện Gút — HOW gap, DATA-to-operate gap — are architectural in nature and cannot be persuasively communicated through presentations before multi-centre scientific evidence is available.

Viện Gút's strategy: build evidence first — academic publication, multi-centre verification — then engage in policy dialogue with the Ministry of Health and the medical community. This is a longer path but more sustainable than premature communication when evidence is insufficient.

13A.2 Patient Education as a Mandatory HOW Component

In the Vien Gut Model, patient and family education is not optional after the consultation — it is a necessary condition for the system to function. The first encounter must establish an educational foundation — however fragile — that will be continuously reinforced throughout the treatment course. The goal at the first encounter is not to transmit all knowledge but to build sufficient trust and minimum awareness for the patient to return for the next follow-up.

The first clinical encounter must establish the education foundation — even though this is the most fragile foundation that will need continuous reinforcement throughout treatment. The goal of education at the first encounter is not to convey all knowledge — but to build sufficient trust and minimum awareness so that the patient returns for the next follow-up.

Priority content at first encounter	Explain that gout can be cured (crystal-free target) — directly opposing widespread misinformation. Explain why flares may recur during early treatment despite correct therapy (flare paradox). Clearly identify danger signs requiring immediate contact and signs that can wait until the next scheduled follow-up.
Education tools being deployed	Viện Gút is developing patient education technology utilising waiting-room time — directly on screens, individualised to each patient's issues. The real-world effectiveness of this approach has not yet been fully evaluated, but it is being seriously invested in as a HOW solution for adherence barriers.
Role of family members	Particularly important for elderly patients, patients living far away (>100 km), or patients with limited health literacy. Family members must be educated in parallel: know medication names, know danger signs, know when to bring the patient to

	Viện Gút immediately and when to call emergency 115.
Current system limitations	Viện Gút has an automated appointment reminder App, but this system operates under outpatient care staff supervision — not fully automated. The safety referral valve still depends on the patient physically carrying documents and records, without electronic interoperability with higher-level hospitals. These are HOW limitations being noted and prioritised in the infrastructure improvement roadmap.

13A.3 Treatment Discipline Assessment at Every Follow-up

Adherence assessment is not a judgement on the patient — it is a structured clinical component performed at every follow-up, enabling the Clinical Conductor to adjust the treatment plan according to reality rather than an idealised scenario. Failure to assess adherence means operating on false data.

Medication and regimen	Is medication supply adequate? Has any medication been discontinued? Has the patient self-purchased additional analgesics/corticosteroids? Is urate-lowering therapy taken regularly? Has the dose been self-adjusted?
Follow-up schedule	Follow-up on time or delayed? If delayed: how long and why? During the interruption, did the patient visit another facility — if so, what advice was received?
Lifestyle and nutrition	Alcohol, high-purine foods, fluid intake? Physical activity? Significant weight change? Any stressful events (surgery, infection, major life changes)?
Trust and awareness	Has the patient received contradictory information from other sources? What is the current level of trust in the treatment plan? Are there questions or concerns that need addressing?

13A.4 System Response upon Detecting Adherence Interruption

When an interruption is detected — whether medication cessation, prolonged appointment delays or self-initiated regimen changes — the system's first response is not reproach but a comprehensive reassessment: where is the patient on the treatment journey, which target organs have been affected, is the window of opportunity still open, and what adjustments are needed?

Evidence from 3 Viện Gút Cases — Adherence Interruption and Systemic Consequences

Case DTH (Male, 58 years): ~1-year interruption without follow-up. Inferred cause: feeling temporarily stable after Phase 2 (Titration), travel distance, economic pressure. Consequence: deterioration of renal and hepatic parameters; emergency referral valve activated (dialysis). System response: full reassessment, regimen adjustment, re-establishment of closer follow-up rhythm.

Case LTAH (Female, 63 years): 7-month interruption without follow-up. Inferred cause: geographic distance (~545 km), feeling of improvement after eGFR rose from 6→11, family pressure. Consequence: eGFR dropped to dangerous threshold; emergency referral valve activated (dialysis). System response: urgent follow-up, integrated regimen adjustment, enhanced family education.

Case LAU (Male, 51 years): 5-month interruption. Inferred cause: continued use of previous facility's medications, temporary loss of trust after contradictory advice. Consequence: AKI occurred; emergency hospitalisation activated. System response: emergency hospitalisation, then outpatient reintegration with enhanced patient education plan.

→ These three cases represent a systemic pattern — not random errors. They demonstrate that adherence interruption is the most common operational risk in outpatient chronic multimorbidity care in LMIC, and the system must be designed to withstand and recover from interruptions — not designed only for ideal patients.

HOW lesson from the three cases: the system needs proactive mechanisms — appointment reminders, early interruption detection, and a structured re-intake process for returning patients — rather than simply waiting for the patient to return on their own when they have already worsened. Viện Gút has deployed an automated appointment reminder App, but this App operates under outpatient care staff supervision: staff monitor the list of unconfirmed patients, proactively contact when needed, and coordinate early-detected interruption cases. This is a human–technology hybrid model — not full automation — appropriate for the characteristics of complex chronic

multimorbidity patients. Patient education technology utilising waiting-room time is being developed by Viện Gút in parallel as a complementary response to this gap.

14. Scope Limitations

This document covers: the operational process of the first clinical encounter within the integrated four-axis model at the Vien Gut polyclinic; the tools for risk stratification, advanced-branch opening and safety-valve activation from the very first clinical contact; and comparison with fragmented and cross-sectional care models based on international evidence.

This document does not cover: detailed treatment protocols by phase (→ B.2); conditions for finding the window of opportunity in severe cases (→ B.3); detailed clinical evidence on target organs (→ Part C); multi-centre verification framework and LMIC transferability (→ Part D).

— The operational process of the first clinical encounter within the integrated four-axis model at Viện Gút polyclinic.

— Stratification tools, advanced branch-opening and safety valve activation from the very first clinical contact.

This document does not cover:

— Detailed treatment protocols by phase (→ B.2: Phase-based treatment and longitudinal follow-up).

— Necessary and sufficient conditions for finding windows of opportunity in severe cases (→ B.3).

— Detailed clinical evidence on each target organ (→ Part C: Four verification targets).

— Multi-centre verification framework and model transfer to LMIC environments (→ Part D).

15. Position within the Vien Gut Document System

Document B.1 is the starting point of the entire operating system. All data collected at the first encounter — T1–T4 risk stratification, the four-axis map, the patient's execution capacity — are mandatory inputs for all documents B.2 through B.5.

Document	Title & core content	Link to B.1
B.1	**The first clinical encounter — activating the integrated four-axis operating system (this document)**	Starting point — activates the entire system
B.2	Phase-based treatment and longitudinal follow-up — T2T across four axes simultaneously	Receives baseline data and stratification from B.1 to determine the starting treatment phase
B.3	Necessary and sufficient conditions for finding windows of opportunity in complex chronic multimorbidity patients	Uses polypharmacy assessment, safety valve and adherence capacity results from B.1 to determine safety margins
B.4	Patient role — operational framework from the patient and family perspective	Receives execution capacity and barrier assessment results from B.1
B.5	Enabling conditions and priority principles when multiple diseases coexist	Receives the list of enabling conditions identified at B.1
Part A	Foundation: why this model exists + core concepts (A.0–A.5)	Provides academic rationale, EBM framework and operational concept set as the foundation for all Part B documents
Part C	Four verification targets on target organs — centre of	Baseline data collected at B.1 serves as

	the entire publication set (C.1–C.4)	the measurement baseline for tracking progress on each target

16. Conclusion

The design of the first clinical encounter in the Vien Gut Model is an integrated clinical operating design for patients with complex chronic multimorbidity — not a test checklist, nor a one-size-fits-all examination protocol.

The core point is the unity of examination objectives and operating architecture. The overarching goal is: comprehensive examination and diagnosis; full assessment of disease severity and target-organ damage; identification of pathological spirals and disease-aggravating factors; T1–T4 treatment-risk stratification; determination of the patient's position relative to guideline coverage; and activation of an appropriate integrated treatment plan under the coordination of the Clinical Conductor and multidisciplinary team, built on the HOW and DATA-to-operate of the Vien Gut Model.

This leads to five practical corollaries:

- The first encounter must produce an integrated clinical picture of the entire patient.
- The four principal disease axes are four multi-centre verification targets — not four mandatory investigation packages for all patients.
- The model must respond to patients within guideline coverage, in the borderline zone, and beyond guideline coverage but still meeting outpatient criteria.
- All workflows must be routed to the Clinical Conductor and MDT as a sensor–response chain.
- If the patient exceeds the outpatient safety margin at the very first encounter, the system must activate the safety referral valve immediately rather than prolonging an encounter that is no longer appropriate.

It is precisely this structure that makes the first clinical encounter the true launch point of integrated, individualised, and operationally viable outpatient care.

Scope Limitations

SCOPE BOUNDARY — THIS DOCUMENT DOES NOT COVER:

✗ Outpatient treatment plan by phase — T2T across four axes simultaneously (→ B.2)
✗ Treatment phase design and specific longitudinal follow-up rhythms (→ B.2)
✗ Window-of-opportunity conditions for complex chronic multimorbidity patients (→ B.3)
✗ Patient role — operational framework from the patient and family perspective (→ B.4)
✗ Enabling conditions and priority principles when multiple diseases coexist (→ B.5)
✗ Clinical evidence on target organs (→ Part C)

PRACTICE PROVENANCE

The operational design of the first clinical encounter was derived from 18 years of integrated practice observation at Viện Gút polyclinic, not from any single-disease guideline.

2007	Viện Gút established — began receiving complex gout patients with multimorbidity
2014	Contact with Prof. Thomas Bardin (EULAR) — confirmed global HOW gap in outpatient practice
2020	Formalised the three-zone patient-response framework and structured branch-opening mechanism
2026	Systematised into an academic publication set — Vien Gut Model v1.0

Evidence basis: Over 18 years of integrated clinical practice; thousands of complex gout cases combined with CKD, heart failure, cirrhosis and chronic multimorbidity [36].

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