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Clinical Research and Studies

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Case Report

Five Complementary Conceptual Prisms for Understanding and Intervening from Modern General Medicine "History"

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Received Date: June 12, 2026; **Accepted date:** June 18, 2026; **Published date:** June 24, 2026

Citation: Jose Luis Turabian, (2026), Five Complementary Conceptual Prisms for Understanding and Intervening from Modern General Medicine "History", *Clinical Research and Studies*, 5(3); **DOI:**10.31579/2835-2882/118

Abstract

Addressing multimorbidity in modern general medicine requires moving beyond the reductionist model of the 20th century. To this end, general practitioners utilize five complementary conceptual frameworks. Each offers a unique way of understanding illness, structuring diagnosis, and intervening clinically in the consultation: History, Geometry, Geography, Narrative, and Emotion. The "History" approach is presented below for immediate clinical use and illustrated with a clinical case. This framework understands multimorbidity as the direct result of the global epidemiological transition and the evolutionary mismatch between our ancient genes and the modern environment. The patient's body is a historical record of accumulated chronic damage. Current pathologies are not isolated events but rather branches sprouting from a common trunk (such as cellular aging, systemic inflammation, or insulin resistance). Clinical intervention strategies would include: 1) Addressing the common etiological cause: Prioritizing comprehensive metabolic or immunological therapies that treat the root cause rather than each symptom separately; and 2) Historical prescription audit: Performing deprescribing. The physician looks for drugs prescribed in the past that now only generate iatrogenic cascades, withdrawing them to restore homeostasis to the aging body.

Key words: multimorbidity; framework; general practice

Introduction

Multimorbidity, the coexistence of two or more chronic diseases, has become a crucial challenge for aging societies. Multimorbidity is distinct from comorbidity, which considers other conditions within the context of an index disease [1]. Multimorbidity is a matter of public concern because it affects overall quality of life, such as increasing mortality and healthcare utilization and expenditures [2]. The prevalence of multimorbidity varies widely between continents: 39% and 43% in Europe and North America; 32% and 38% in low-middle-income and upper-middle-income countries, respectively [3].

Multimorbidity itself can be treated as a distinct entity, since patients with disparate presentations of multimorbidity may demonstrate similar health trajectories. This 'multimorbidity lens' can highlight the profound interrelationships between psychiatric and medical conditions. Although not exclusively a feature of aging, multimorbidity is strongly associated with aging. However, many additional factors modulate its presence and intensity: lower socioeconomic status, lower education, adverse childhood experiences, racial discrimination, and loneliness. Multimorbidity implies polypharmacy and vice versa (risk of adverse drug effects, drug interactions, drug-disease interactions, and potentially problematic polypharmacy) [1].

Thus, the accumulation of health problems is a complex condition and can occur as a result of a genetic predisposition (a natural tendency), environmental factors, or unknown causes: 1) Causality, associations, and links (through a common origin pathway, through the accumulation of risk factors, through genetic bases, through molecular and biological links); 2) Coincidence, seriality, and synchronicity (the simultaneous occurrence of two significant events that are not causally connected); 3) Chance; and 4) Due to our own interventions to address other pre-existing problems (such as pharmacological iatrogenesis or surgical sequelae) [4].

However, evidence regarding when and how chronic diseases begin to cluster, their trends and transitions, their prognostic significance, conceptualization, and intervention strategies remains limited [5-8].

The treatment of multimorbidity requires, by definition, an approach that transcends conventional medical thinking and the boundaries of different disciplines, specialties, organizations, and departments; it requires a radical shift in the conceptualization and treatment of medical illnesses. A greater appreciation of the multifactorial foundations of multimorbidity helps promote a better approach to managing medical and psychiatric multimorbidity. It is important for clinicians to recognize that the presence of multimorbidity is influenced by multiple biological (e.g., epigenetic changes, inflammation), pharmacological (e.g., polypharmacy, changes in pharmacokinetics/pharmacodynamics), psychological (e.g., defense mechanisms, psychological distress), and social (e.g., loneliness, social connection) factors. Understanding these contributing factors can guide

clinicians to avoid the cumulative implementation of a risky single-disease approach and instead focus on optimizing medication management, improving care coordination, and treating the whole person, including the patient's goals, values, and objectives [1, 9].

As a consequence of all the above, the general practitioners (GPs) are best positioned to manage multimorbidity. Addressing multimorbidity in modern general practice requires moving beyond the reductionist model of the 20th century. To this end, GPs utilize five complementary conceptual prisms. Each offers a unique way of understanding illness, structuring diagnosis, and intervening clinically in the consultation. Sometimes medicine should learn from historians, geometers, geographers, novelists, and psychologists. The "History" approach is presented below and illustrated with a clinical case.

Clinical Case

Michael (78 years old) goes to his new family doctor's office accompanied by his daughter. The reason for the consultation is that "he has too many medications, walks very slowly, falls frequently and is losing his memory." The doctor reviews Michael's medical history to understand how his pathologies and treatments accumulated over time: 20 years ago (Age 58) he suffered from work stress and overweight. He was diagnosed with high blood pressure and hypercholesterolemia and was treated with Enalapril (20 mg) and Atorvastatin (40 mg). 15 years ago (Age 63) he had heartburn due to drinking coffee and fast foods. Omeprazole (20 mg) was prescribed indefinitely. 10 years ago (Age 68), after retirement, sedentary lifestyle and post-epidemiological transition diet, Type 2 Diabetes was found, which was treated with Metformin (1000 mg). He also develops chronic pain in the knees (Osteoarthritis), which was treated with Ibuprofen (600 mg) if there is pain. 5 years ago (Age 73), chronic use of Ibuprofen caused gastritis and raised her blood pressure. A cardiologist adds a second hypotensive agent: Amlodipine (10 mg). Knee pain prevents him from walking; He becomes depressed due to the loss of autonomy and a psychiatrist prescribes Amitriptyline (25 mg) to sleep and improve his mood. 1 year ago (Age 77): Michael begins to show cognitive confusion, dizziness when standing up (orthostatic hypotension) and severe constipation. His previous doctor adds Donpezil (5 mg) for memory and Plantago ovata for constipation. Currently there is Extreme Polypharmacy (8 drugs daily).

The GP does not apply the guidelines for each disease separately. Instead, use a Historical Deprescribing Clinical Strategy: analyze how drugs from the past are causing the multimorbidity of the present due to aging and loss of homeostatic reserve (frailty). And it applies the deprescription in three priority phases:

Phase 1: Elimination of Immediate Damage (Iatrogenic Cascades): Discontinue Amitriptyline and Ibuprofen. Amitriptyline is an old antidepressant with a high anticholinergic load. In a 78-year-old brain, this drug causes mental confusion, constipation, and falls. Your current "memory loss" is not actual dementia; It's a side effect. The ibuprofen was damaging his stomach and raising his blood pressure, forcing him to use more drugs. Ibuprofen is changed to Paracetamol prescribed for osteoarthritis and sleep hygiene is prescribed to withdraw the antidepressant.

Phase 2: Adjustment to the Current Biological Clock (Prevention vs. Frailty): Discontinue Atorvastatin and reduce/discontinue Amlodipine. Statins in primary prevention have a Time to Benefit of more than 10 years. At age 78 and frail, the risk of muscle pain and weakness from the statin far outweighs the benefit of preventing a future heart attack. On the other hand, the combination of Enalapril + Amlodipine excessively reduces blood pressure when getting up, causing dizziness and falls. The statin is withdrawn and Amlodipine is suspended, maintaining only Enalapril to protect his heart without lowering his blood pressure.

Phase 3: Historical Need Assessment: Phase out Omeprazole and reassess the need for Donpezil. Omeprazole was prescribed 15 years ago due to temporary heartburn. Its chronic use reduces the absorption of Vitamin B12 and magnesium, worsening cognitive function and muscle strength. Having withdrawn the Ibuprofen, the stomach is no longer in immediate danger. Donpezil is temporarily stopped to see if memory improves after clearing the brain of the effects of amitriptyline.

After applying the historical deprescription in a phased manner, Michael's health map changes drastically after 6 months: Current medications: Metformin (for his diabetes), Enalapril (for his hypertension) and Paracetamol (only if his knees hurt a lot). He went from 8 to 2 fixed drugs. The dizziness disappears completely when your blood pressure is regulated when standing. By withdrawing the drugs that were poisoning his brain (amitriptyline, chronic omeprazole), the supposed dementia subsides: Michael is oriented again, speaks fluently and regains his mental agility. Not being dizzy or confused, he walks around the neighborhood again, breaking the vicious cycle of post-transition sedentary lifestyle.

Discussion

What is the "history" of the evolutionary process of multimorbidity?

The history of the evolutionary process of multimorbidity is a direct result of the global epidemiological transition of the 20th century, where medicine shifted from combating acute infections to managing the accumulation of chronic pathologies resulting from increased life expectancy (10-12). The chronological and conceptual evolution of this phenomenon can be described as follows:

1. The Era of Divisibility and the Single Disease (19th Century - Mid-20th Century)

During this period, biomedicine was structured around the approach of controlling a single disease. The discovery of pathogens and the development of antibiotics reinforced a reductionist medical model. Health systems were designed around medical specialties by organ system, assuming that diseases occurred in isolation and linearly (12-14).

2. The Birth of "Comorbidity" (1970)

As the population began to age due to improvements in public health, physicians identified patients with multiple conditions. In 1970, Alvan Feinstein coined the term "comorbidity." This concept described the presence of an additional clinical entity that appeared during the course of an "index disease" or primary diagnosis. It still maintained a hierarchical approach centered on a main pathology (15-17).

3. The Transition to "Multimorbidity" (1976-1990s)

It soon became clear that in elderly patients there was no single dominant disease, but rather a cluster of interconnected pathologies. The term "multimorbidity" (or Multimorbidität) originated in German medical literature in the mid-1970s and was formally introduced in the English-speaking world and globally in the 1990s. Unlike comorbidity, multimorbidity eliminates the hierarchy. It recognizes the coexistence of multiple chronic conditions without prioritizing one over another (12, 18, 19).

4. The Epidemiological Explosion of the 21st Century

In the 21st century, multimorbidity ceased to be an exception and became the clinical norm. This increase is due to (12, 20, 21): 1) the demographic transition with the aging of the population (22); 2) shared biological mechanisms: disease clusters (such as diabetes, hypertension, and renal failure) share common biological pathways such as accelerated cellular aging, chronic systemic inflammation, and mitochondrial dysfunction (23, 24); 3) The presence of socioeconomic factors: social determinants and poverty advance the clinical expression of multimorbidity by up to 10 years (25-27); and 4) iatrogenesis and medicalization: cross-treatments with medications to mitigate risk factors have generated loops that often lead to polypharmacy and new associated pathologies (9).

Today, research has evolved from simply counting diseases to mapping trajectories and dynamic clusters. It analyzes how the onset of one disease sequentially predicts the next throughout a person's life. This compels current healthcare systems to abandon specialty-based, fragmented clinical guidelines (28-30).

What specific clinical strategies do GPs use to prioritize which disease to treat first, based on the concept of the "history" of multimorbidity evolution?

For GPs to apply prioritization strategies specifically based on the fact that multimorbidity is the result of the global epidemiological transition of the 20th century, they must use an evolutionary and adaptive medicine approach. Within this framework, GPs use the following five specific clinical strategies to prioritize what to treat first:

1. Reversing the Evolutionary Mismatch (Etiological Priority)

The GP knows that treating each disease separately is useless if the environmental stimulus that caused the transition to chronicity persists. This clinical strategy prioritizes addressing metabolic flexibility and mitochondrial health over optimizing isolated drugs (31, 32). For example, the GP's specific action if a patient presents with the classic post-transition combination (obesity, type 2 diabetes, and hypertension) would be to prioritize prescribing strength training and restricting refined carbohydrates. By altering the environment that makes the body ill, the pressure on all three biological fronts is simultaneously reduced.

2. Containing the "Domino Effect" of Survival

In the 20th century, acute medicine learned to save lives from events that were previously fatal. The result is that the patient survives but begins a trajectory of multimorbidity (heart failure, then kidney damage, then anemia) (33, 34). The GP prioritizes based on the sequential pathophysiology of survival. The clinical strategy prioritizes blocking the organ that historically acts as the "first domino" to fall and pull the others down with it. For example, the GP's specific action in a post-heart attack patient who begins to develop kidney disease would be to prioritize the use of nephroprotective and cardioprotective drugs (such as SGLT2 inhibitors or SGLT2i). The goal is not only to lower blood glucose or blood pressure, but to halt the progression of the inherited chain of organ degeneration resulting from the medical transition.

3. Neutralization of Chronic Low-Grade Inflammation (Inflammaging). The increase in life expectancy has revealed a new evolutionary phenomenon: the aging of the immune system. Modern chronic diseases (from osteoarthritis to dementia and cardiovascular disease) share a common root: the chronic systemic inflammation that accompanies aging (35-37). The clinical strategy prioritizes deactivating the foci that fuel this global inflammatory response, rather than treating the local symptoms of each organ. For example, if a patient suffers from osteoarthritis pain, depression, and cardiovascular risk, the GP's specific action would be to prioritize the treatment of gut dysbiosis (a gut microbiota altered by the modern diet) and sleep hygiene. By reducing circulating inflammatory cytokines, joint pain, mood, and vascular endothelium improve simultaneously.

4. Pruning "Pharmacological Archaeology." The 20th-century medical model was structured under the paradigm of "one pill for every symptom." In a patient with multimorbidity, this cumulative approach generates a therapeutic Frankenstein. The clinical strategy prioritizes historical deprescribing: withdrawing drugs that belong to clinical guidelines for a single disease if they increase the patient's overall frailty (38-40). Thus, for example, the GP's specific action would be to review the patient's medical history as if it were an archaeological site. If you discover that a drug prescribed 10 years ago for primary prevention (e.g., a statin or chronic gastric protector) is causing current side effects (muscle pain or malabsorption), you would prioritize its withdrawal to restore homeostasis to the aging body.

5. Synchronizing Effort with Individual Demographic Transition. The epidemiological transition has given us more years of life, but not always with good health. When a patient's history progresses toward the final stages of multimorbidity, the body enters a state of progressive frailty (loss of homeostatic reserve) (41). Clinical strategy prioritizes radically changing the objectives of 20th-century guidelines (focused on analytical numerical values) to 21st-century objectives centered on functional capacity (42). Thus, for example, the GP's specific action if the patient's biological evolution indicates that they are in an advanced stage would be to deprioritize strict controls (such as maintaining extremely low blood pressure) and prioritize avoiding orthostatic hypotension, preventing falls and fractures that would immediately end their autonomy.

In short, sometimes in medicine we should learn from the work of historians: they accumulate facts upon which they then theorize. A circle, a line, several lines… parallel, diverging, converging, but always a cumulative historical process. Events not only follow one another, but also unfold in a visible direction; that is, they establish a pattern: a series of events gives rise to an orderly development from cause to inevitable results. The GP must not only record the facts, but also explain the causes of the events and demonstrate a certain order that transcends mere temporal succession.

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