**Review Article**

# MEDICAL DOGMAS: ORIGINS, IMPLICATIONS, AND THE WAY FORWARD

**Yeibake WS**

Department of Paediatrics, Federal Medical Centre, Yenagoa, **Bayelsa State, Nigeria**

**Corresponding Author**: Dr. Weriwoyingipre Silver Yeibake; 08038826156; silveryeibake@gmail.com

## Abstract

**Background:** Medical dogmas are clinical beliefs or practices accepted without adequate scientific evidence and remain common despite the growth of evidence-based medicine. They persist through tradition, authority, cognitive bias, institutional inertia, and commercial and cultural influences, with important consequences for patient safety, quality of care and health system efficiency.

**Objectives:** This review examines the historical origins of medical dogmas, their clinical and system-level implications, and practical approaches for identifying, challenging and replacing them with evidence-based practice.

**Methodology:** I undertook a narrative review of peer-reviewed literature and authoritative evidence-based medicine sources, thematically synthesising historical, conceptual, and contemporary evidence. The review draws on guideline repositories and major review literature to characterise recurring origins, examples, harms and reform strategies relevant to clinical practice.

**Results:** Medical dogmas commonly arise from historical tradition, incomplete or outdated evidence, authority-based learning, industry influence, patient expectations and resistance to change. Their effects include unnecessary investigations and treatment, avoidable adverse events, antibiotic resistance, increased costs, delayed innovation, and erosion of public trust. These harms are magnified in low-resource settings, where limited budgets, workforce shortages and weak local evidence generation make waste and inefficiency especially consequential.

**Conclusion:** Medical dogmas remain a significant barrier to safe, efficient, and equitable care. Reducing them requires stronger evidence-based medical training, critical appraisal skills, quality improvement systems, and a culture of intellectual humility in clinical practice.

**Keywords**: Medical dogmas, Evidence-based medicine, Clinical practice guidelines, Healthcare quality, Critical thinking, Patient safety.

**Cite this article:** Yeibake WS. Medical dogmas: origins, implications, and the way forward. Niger Delta J Med Med Res. 2026;5(3):141–47.

## INTRODUCTION

Medicine represents one of humanity's most sophisticated endeavours, integrating scientific knowledge, clinical expertise, and humanistic care to prevent and treat disease. Despite remarkable advances in molecular biology, imaging technology, pharmacotherapy, and surgical techniques over the past century, medical practice remains burdened by **medical dogmas**—clinical practices, beliefs, or principles accepted as unquestionable truth despite lacking robust scientific validation.

The term **"dogma"** derives from the Greek **dogma** (δόγμα), meaning **"that which seems good to one"** or **"opinion" or "decree."** Originally used in philosophical and religious contexts to denote doctrines accepted without question, the term has been applied to medicine to describe practices that persist through tradition, authority, or inertia rather than scientific evidence [1].

The concept of evidence-based medicine (EBM), formally introduced by Gordon Guyatt at McMaster University in 1991, revolutionised clinical decision-making by prioritising the integration of research evidence, clinical expertise, and patient preferences [2]. In 1996, Sackett et al. provided the widely accepted definition of EBM in the *British Medical Journal* as "the conscientious, explicit,

and judicious use of current best evidence in making decisions about the care of individual patients" [3]. Despite EBM's widespread adoption, medical dogmas continue to permeate clinical practice, with studies suggesting that **30-50% of medical care is inconsistent with evidence-based guidelines** [4].

Medical errors attributed in part to dogmatic practices represent a critical public health challenge. A 2016 analysis published in **The BMJ** suggested that medical errors are the **third leading cause of death in the United States,** behind only heart disease and cancer, with at least **251,454 people dying annually in U.S. hospitals due to mistakes in care** [5]. The World Health Organisation estimates that **medication-related harm affects 1 out of every 30 patients** in healthcare, with more than a quarter of this harm regarded as severe [6].

This article provides a comprehensive examination of medical dogmas, drawing exclusively from peer-reviewed literature and authoritative sources. We explore the historical and contemporary origins of medical dogmas, analyse their profound implications for patients and healthcare systems, and propose a multifaceted framework to advance evidence-based practice through education, quality improvement, and systemic reform.

## MATERIALS AND METHODS

A narrative review of peer-reviewed literature and authoritative evidence-based medicine sources was undertaken. Searches drew on guideline repositories (e.g., WHO, NICE, Cochrane, IDSA, ASA, GINA, and AHA) and major review and commentary literature addressing medical dogma, low-value care, and evidence-based practice. Sources were thematically synthesised to characterise the recurring historical origins, illustrative examples, clinical and system-level harms, and reform strategies relevant to clinical practice, with particular attention to relevance for low-resource and Nigerian healthcare settings.

## UNDERSTANDING MEDICAL DOGMAS

### Definition and Operational Characteristics

**Medical dogmas** are clinical practices, beliefs, or principles that exhibit the following characteristics:

First, they are **accepted as truth without sufficient evidence**, based on tradition, authority, or anecdote rather than rigorous research [1]. Second, they remain **unquestioned despite contradictory evidence,** resisting change even when new data emerges [7]. Third, they are **traditionally held and culturally embedded,** passed down through medical training and institutional culture [4]. Fourth, they are **presented as universal rules**, applied broadly without consideration of individual patient circumstances. Fifth, they are **defended emotionally**, with clinicians becoming defensive when their practices are questioned [7]. Finally, they **lack hierarchical evidence**, relying on expert opinion (Level 5 evidence) rather than systematic reviews or RCTs (Level 1 evidence) [2].

### Levels of Evidence and Dogma Classification

The hierarchy of evidence in evidence-based medicine provides a framework for identifying dogmatic practices. Level 1a evidence consists of systematic reviews of randomised controlled trials, representing the highest quality with the lowest risk of bias. Level 1b evidence includes individual randomised controlled trials with narrow confidence intervals, showing high quality and low dogma risk. Level 2a evidence comprises systematic reviews of cohort studies of moderate to high quality. Level 2b evidence includes individual cohort studies with moderate quality but moderate-to-high domain risk. Level 3a evidence consists of systematic reviews of case-control studies of moderate to low quality. Level 3b evidence includes individual case-control studies with low quality and high risk of bias. Level 4 evidence encompasses case series and low-quality studies with very low quality and very high dogma risk. Level 5 evidence includes expert opinion and mechanistic studies without empirical support, representing the lowest quality and the highest risk of dogma [8].

**Dogmatic practices typically rely on Level 4-5 evidence** such as expert opinion, case reports, and mechanistic reasoning despite the availability of higher-level evidence.

### Evidence-Based Examples of Medical Dogmas

The medical literature documents numerous well-established medical dogmas with supporting peer-reviewed evidence.

**Bed rest for acute low back pain** originated in traditional practice, based on the assumption that rest promotes healing. However, current evidence from Cochrane reviews and ACP Guidelines demonstrates that early

mobilisation reduces recovery time, whereas bed rest can lead to muscle atrophy, depression, and deep vein thrombosis. This dogma results in 50% longer recovery, increased disability, and additional costs exceeding $1,000 per patient [7].

**NPO after midnight for surgery** originated from historical anaesthetic concerns about aspiration risk. Current ASA Guidelines and ERAS Society recommendations indicate that clear liquids are allowed 2 hours before surgery, thereby reducing the risk of aspiration and improving recovery. This dogma causes prolonged fasting, increased insulin resistance, patient discomfort, and delayed recovery [7].

**Antibiotics for viral upper respiratory infections** were prescribed out of habit, patient pressure, and fear of missing a bacterial infection. Current IDSA Guidelines and Cochrane reviews demonstrate no benefit for viral infections while increasing antibiotic resistance, adverse effects, and cost. This dogma directly contributes to antibiotic resistance, C. difficile infection, adverse drug reactions, and cost wastage [7].

**Routine chest X-ray for asthma exacerbation** originated from defensive medicine and historical practice. Current GINA Guidelines and NICE Guidelines demonstrate that chest X-ray is only indicated if pneumonia is suspected or the attack is severe. This dogma results in unnecessary radiation exposure, false positives, delayed treatment, and increased costs [7].

**Prophylactic antibiotics for all minor procedures** originated from historical fears of infection and medicolegal concerns. Current AHA Guidelines and IDSA recommendations demonstrate that antibiotics are only indicated for high-risk procedures, while routine use increases resistance. This dogma leads to antibiotic resistance, adverse effects, increased costs, and no clinical benefit [4].

**CT scan for every head injury** originated from defensive medicine. Current evidence from the Canadian CT Head Rule and NEXUS II demonstrates that clinical decision rules reduce unnecessary imaging without increasing missed injuries. This dogma results in radiation exposure, false positives, cost, and delayed care [4].

**Twentieth-century dogmas that prevent sustainable healthcare represent** outdated scientific assumptions and institutional inertia. Current evidence demonstrates that rigid adherence to outdated dogmas impedes innovation and sustainability, causing wasted resources, environmental harm, and reduced access to care [1].

**Vitamin C prevents colds**, a claim originating with Linus Pauling in the 1970s. Cochrane reviews indicate minimal effect, with a possible slight reduction in duration among regular users. This dogma creates false expectations, leads to cost waste, and provides no preventive benefit.

**Detox diets, which cleanse the body,** originated from complementary medicine and marketing. Evidence from the NIH Office of Dietary Supplements demonstrates that the liver and kidneys naturally detoxify with no evidence for detox diets. This dogma creates false expectations, costs, potential harm, and delayed proper treatment [1].

**Fever must be treated immediately** due to fear of complications and parental anxiety. Current AAP and NICE Guidelines demonstrate that fever is protective and should be treated based on severity and patient comfort. This dogma causes unnecessary medication, masking of serious illness, and cost.

**NSAIDs cause peptic ulcers in all patients** represents an overgeneralization from high-dose studies. Current ACG Guidelines indicate that risk varies with dose, duration, and individual risk factors, and PPIs are recommended for high-risk patients. This dogma causes overuse of PPIs, increased cost, and reduced NSAID use when beneficial.

**Antihistamines for the common cold originated in the tradition of symptomatic treatment**. Current AAP Guidelines and Cochrane reviews demonstrate limited benefit with significant side effects in children. This dogma causes sedation, paradoxical excitation, and cost without benefit.

## ORIGINS OF MEDICAL DOGMAS

### Historical Traditions in Medicine

Medical dogmas have deep historical roots spanning thousands of years of healing practices.

**Ancient Greek Medicine (400 BCE - 200 CE):** Hippocratic Medicine introduced the **humoral theory,**

proposing that health depends on the balance of four bodily fluids: blood, phlegm, yellow bile, and black bile. This theory dominated Western medicine for **2,000 years** despite lacking empirical evidence [9]. Galenic Medicine (130-210 CE) advanced anatomical knowledge through animal dissection, but many errors persisted for centuries because Galen's authority was unquestioned. These errors included blood flowing through invisible pores in the septum, the liver as the source of blood, and bloodletting as the treatment for humoral imbalance. Bloodletting was practised for **2,500 years** based on humoral theory, causing significant morbidity and mortality before being disproven by rigorous clinical trials in the 19th century.

**Medieval Islamic Medicine (800-1400 CE):** Islamic medicine preserved and expanded Greek knowledge, establishing hospitals and surgical techniques. However, some practices persisted without validation, including the use of theriac (a complex antidote) for all poisons, the use of astrological influences in diagnosis and treatment, and certain herbal remedies without clinical testing.

**Traditional African Medicine:** Healing practices incorporate spiritual, herbal, and community-based approaches. While some remedies have demonstrated efficacy, such as artemisinin from *Artemisia annua* for malaria, many practices lack scientific validation, including attributing disease to spiritual causes, using herbal combinations without pharmacological testing, and performing ritual practices without clinical benefit. Traditional medicine is increasingly integrated into formal healthcare systems in Africa, but many practices require scientific validation before widespread adoption [10].

**Authority-Based Learning and Medical Education**

Medical education has historically emphasised **deference to authority** over critical inquiry. Practices are adopted with the rationale "we do it this way because Dr X said so"; senior consultants' practices are adopted uncritically; textbook knowledge is accepted as absolute truth; resistance to questioning established authorities occurs; and memorisation is prioritised over analysis. This creates a culture in which critical thinking is discouraged, and students are trained to memorise rather than analyse, perpetuating dogmatic practices across generations [7].

**Lack of Evidence in Pre-EBM Medicine**

Before the **evidence-based medicine movement** was formally established in 1991, many practices were adopted on the basis of inadequate evidence. Anecdotal experience generalised individual case reports to populations, as seen when antiarrhythmics after myocardial infarction were later shown to increase mortality in the CAST trial of 1989. Pathophysiological reasoning favoured "it makes sense theoretically" without clinical testing, such as high-dose vitamin C for cancer, which showed no benefit in randomised controlled trials. Expert opinion relied on consensus without systematic review, as exemplified by the use of prophylactic antibiotics for all procedures, which increased antibiotic resistance. Small uncontrolled studies with limited sample sizes and no control groups supported ineffective treatments like homoeopathy for various conditions. Case series without comparison groups and selection bias led to the later disproven promotion of various surgical techniques [11].

**Pharmaceutical Industry Influence**

The pharmaceutical industry has significantly shaped medical practice through multiple mechanisms. Marketing-driven prescribing promoted "off-label" use without evidence. Selective publication ensured positive results were published while negative results were withheld. Direct-to-consumer advertising created patient demand for specific medications. Industry-sponsored continuing medical education provided biased educational content. Ghostwriting allowed industry-written manuscripts to be published under academic authors' names. Financial conflicts of interest influenced clinicians through industry relationships.

The **opioid crisis** in the United States demonstrates the devastating consequences of pharmaceutical influence. In the 1990s, pharmaceutical companies promoted opioids for chronic non-cancer pain with the marketing claim that "addiction risk is less than 1%," based on a letter to the editor rather than research. Opioid prescriptions increased fourfold from 1999 to 2010, resulting in over 500,000 opioid-related deaths from 1999 to 2019 and $1 trillion in economic costs. Systematic reviews show opioids provide minimal long-term benefit for chronic pain while causing significant harm [7].

**Cultural and Societal Beliefs**

Cultural beliefs influence medical practice through multiple pathways. Traditional medicine includes herbal remedies for diabetes without validation, with variable evidence—some effective, like metformin from *Galega officinalis*, others ineffective. Patient expectations create demands such as "I always get antibiotics for my cough," even though antibiotics are ineffective for viral upper respiratory infections. Media influence through health news sensationalism creates public demand, often based on preliminary studies later disproven. Religious beliefs integrate faith healing into medical care, with variable evidence, potentially delaying appropriate treatment. Socioeconomic factors create resource limitations that establish habitual practices which may persist despite the availability of better options.

In Nigeria, traditional birth attendants continue to practice alongside formal healthcare, with some practices conflicting with evidence-based obstetric care, including delayed delivery and unsafe incisions of the umbilical cord.

### Institutional Inertia

Once practices are established in healthcare institutions, they become difficult to change through multiple mechanisms. Standard operating procedures become "set in stone." Quality metrics and performance measures reinforce current practices. Cost structures and reimbursement systems favour current practices. Workforce training ensures new staff are trained in existing practices. Fear of litigation promotes defensive medicine. All these factors combine to create resistance to change and institutional dogma.

Routine preoperative testing, including CBC, electrolytes, chest X-ray, and ECG, for all surgical patients persists in many institutions despite guidelines recommending **targeted testing based on clinical indication and surgical risk** [4].

### Cognitive Biases in Medical Practice

Clinicians are susceptible to cognitive biases that reinforce dogmatic thinking. **Confirmation bias** involves seeking evidence that supports existing beliefs while ignoring contradictory evidence, such as finding studies that support your practice while ignoring better-quality studies that contradict [4]. **Anchoring bias** involves relying heavily on the first piece of information, making the first diagnosis or treatment become "correct," such as when an initial diagnosis of anxiety prevents investigation of an organic cause. **Status quo bias** creates a preference for the current state and resistance to changing practices, exemplified by "we've always done it this way." **Authority bias** involves overvaluing expert opinions and accepting them without evidence, such as following a senior consultant's practice without checking the evidence [7]. **The availability heuristic involves judging based on recent or memorable examples, where a recent case influences future decisions, such as a recent adverse event with a new drug leading to the** overuse of an old drug. **Sunk cost fallacy** involves continuing due to prior investment, such as continuing ineffective treatments because of months of prior treatment. **The bandwagon effect involves adopting beliefs because many others hold them, leading to practices spreading without evidence, such as the widespread use of a drug before adequate safety data are available**. **Dunning-Kruger effect** involves overestimating competence in areas of low knowledge, leading generalists to prescribe specialist medications without evidence.

A systematic review of cognitive biases in medical decision-making identified **confirmation bias** and **anchoring bias** as the most common biases affecting diagnostic accuracy [4].

## IMPLICATIONS OF MEDICAL DOGMAS

### Patient Harm: Evidence from Peer-Reviewed Literature

Medical dogmas directly cause patient harm through multiple mechanisms.

**Ineffective and Harmful Treatments:** Ineffective treatment occurs when antibiotics are prescribed for viral upper respiratory infections, with no benefit demonstrated in multiple randomised controlled trials, delaying appropriate care and providing a false sense of security. Prolonged recovery results from bed rest for back pain when early mobilisation is superior, causing a 50% longer recovery and increased disability. Adverse drug reactions occur with opioids for chronic pain, with minimal benefit and significant harm leading to addiction, overdose, and 500,000 deaths from 1999 to 2019. Antibiotic resistance

results directly from overprescribing antibiotics, creating multidrug-resistant organisms, treatment failures, and 700,000 deaths per year globally. Iatrogenic complications occur from unnecessary CT scans, causing radiation exposure without benefit, increasing cancer risk and false positives. Medication errors result from outdated protocols, contributing to 251,454 deaths per year in U.S. hospitals [5].

**Medical Errors and Mortality**

**Key Statistics**: Medical errors are the **third leading cause of death** in the United States, behind only heart disease and cancer [5]. **251,454 people** die annually in U.S. hospitals due to mistakes in care [5]. This represents **one-third or more of all hospital deaths** [5]. The WHO estimates that 1 in 10 patients is harmed during hospital care globally [6]. **Medication-related harm** affects 1 out of every 30 patients, with more than 25% regarded as severe [6].

Lower estimates from a 2020 Yale meta-analysis found evidence of about **22,000 preventable deaths annually**, mostly in people with less than three months to live [5]. Reliable reviews in Norway and the United Kingdom put the rate of preventable hospital deaths at **4.2% and 3.6%,** respectively, representing 25,000-30,000 deaths per year in the U.S. Harms from medical error are difficult to measure, and researchers should report confidence intervals rather than false precision [5].

**Economic Impact: Healthcare Waste**

Medical dogmas contribute substantially to healthcare waste.

**Global Healthcare Waste**: Unnecessary care costs approximately **$750 billion per year in the U.S.** through unnecessary tests, treatments, and procedures. Inefficient care accounts for 20-30% of healthcare spending due to prolonged hospital stays and duplicate testing—the global total approaches **$2 trillion per year worldwide** from all forms of waste.

**Specific Examples of Waste:** Antibiotics for viral URI cost $1.2 billion annually in the U.S., with potential savings of $1.2 billion from not using antibiotics for viral URI. Routine preoperative testing costs $3-5 billion annually, with potential savings of $2-4 billion through targeted, risk-based testing. Bed rest for back pain costs $15 billion annually, with potential savings of $7.5 billion through early mobilisation. Unnecessary imaging costs over $100 billion annually, with potential savings of $30-50 billion through clinical decision rules. Overtreatment of early prostate cancer costs $2-3 billion annually, with potential savings of $1.5-2 billion through active surveillance.

**Nigerian Context:** In resource-limited settings, waste from dogmatic practices is particularly devastating. ₦50,000-₦100,000 is wasted per patient on unnecessary preoperative tests. Antibiotic resistance increases treatment costs by 2-3 fold. Prolonged hospital stays due to outdated practices significantly increase costs.

**Stifled Innovation and Scientific Progress**

Medical dogmas create barriers to scientific advancement through multiple mechanisms. Resistance to new evidence occurs when established practices are defended against new data, such as when laparoscopic cholecystectomy was initially rejected as "too risky," delaying the adoption of a safer, faster-recovery technique. Publication bias occurs when studies contradicting dogmas face publication difficulties because negative trials are often not published, inflating the perception of treatment efficacy. Funding barriers occur when research challenging established practices receives less support, such as research on alternative cancer treatments being underfunded, slowing progress in innovative approaches. Professional resistance occurs when clinicians reject new approaches without adequate evidence, such as stem cell therapy for various conditions, delaying the adoption of beneficial therapies. Regulatory barriers occur when guidelines are slow to update based on new evidence, such as COVID-19 treatment guidelines lagging behind evidence, resulting in suboptimal patient care during the pandemic.

A study of guideline updates found that **only 50% of guidelines are updated within 5 years**, despite rapid evolution of medical evidence [11].

**Patient Safety and Quality of Care**

Dogmatic practices directly compromise patient safety through multiple factors. Standardised protocols without flexibility ignore individual patient circumstances, such as using the same dose for all patients regardless of weight or renal function. Lack of critical thinking occurs when

clinicians follow protocols without understanding the rationale, such as continuing ineffective treatment because "protocol says so." Failure to update knowledge allows practices to persist despite new evidence, such as outdated antibiotic dosing. Inadequate handoffs cause information loss during care transitions, leading to medication errors during transfers.

**Statistics:** 10-15% of hospital admissions worldwide result in preventable adverse events [6]. Diagnostic errors affect an estimated **12 million U.S. adults annually**, with 795,000 patients experiencing harm or death [5].

**Erosion of Public Trust**

When medical dogmas are debunked, public trust in medicine erodes, leading to multiple consequences. "Doctor said X, now they say Y" creates confusion about changing recommendations, leading to public disillusionment and reduced compliance. Medical misinformation spreads through social media, exploiting uncertainty, fueling anti-vaccine movements and health misinformation. Alternative medicine use increases when patients seek alternatives when mainstream medicine fails, causing delayed proper treatment and financial harm. Medical tourism increases when patients seek care abroad due to distrust of local healthcare, leading to underutilization of the healthcare system. Reduced research participation occurs when distrust reduces willingness to participate in trials, slowing medical progress.

The **vaccine-autism myth** (Wakefield study, 1998, later retracted) led to significant declines in vaccination rates and subsequent outbreaks of measles, mumps, and whooping cough [7].

**Professional Stagnation and Burnout**

Medical dogmas directly affect healthcare professionals in multiple ways. Failure to update knowledge occurs when CPD activities reinforce outdated practices, leading to professional obsolescence and reduced competence. Career limitations arise when clinicians resistant to change miss advancement opportunities, leading to slower career progression. Burnout occurs when clinicians experience frustration that practices they must follow don't work, leading to emotional exhaustion, depersonalization, and a diminished sense of accomplishment. Ethical dilemmas arise when clinicians know practices are ineffective yet continue them under pressure, leading to moral distress and cognitive dissonance. Teaching challenges arise when students are taught outdated practices they must later unlearn, adding a burden on educators and causing student frustration.

**Burnout Statistics:** 40-50% of physicians report symptoms of burnout. Physicians who practice evidence-based medicine report lower burnout rates.

**Impact on Healthcare Systems in Developing Countries**

In Nigeria and other developing nations, medical dogmas have amplified consequences through multiple challenges. Resource scarcity means dogmatic practices waste limited resources, with 20-30% of waste exacerbating existing shortages. Brain drain occurs when clinicians leave for systems with stronger evidence-based practices, with over 50,000 Nigerian doctors emigrating between 2010 and 2020. Training gaps occur when medical schools teach outdated practices, requiring graduates to undergo retraining. Limited research occurs because few resources exist for local evidence generation, with only 0.5% of global research coming from Africa. Dependency on foreign guidelines occurs when Western guidelines may not fit the local context, resulting in inappropriate drug dosing and unavailable medications. Traditional medicine integration occurs when unvalidated practices are incorporated into formal healthcare, resulting in variable efficacy and potential harm.

**Economic Impact in Nigeria:** ₦200 billion is potentially wasted annually on unnecessary tests and treatments. Antibiotic resistance incurs an additional cost of ₦50,000-₦100,000 per patient. Prolonged hospital stays due to outdated practices cost ₦10,000-₦50,000 per day.

**THE WAY FORWARD**

**Evidence-Based Medicine: The Foundation**

**Definition:** Evidence-based medicine (EBM) is "the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients" [3].

**Five Core Components of EBM**

**Best research evidence** includes systematic reviews, RCTs, and meta-analyses from sources such as Cochrane reviews and PubMed [2]. **Clinical expertise** involves the physician's experience and judgment, such as recognising atypical presentations. **Patient values and preferences** encompass individual patient circumstances and goals, such as a patient's desire to avoid surgery. **Available resources** include context-specific considerations like cost and availability in your setting. **Clinical context** involves the specific situation and urgency, such as emergency versus elective care.

**Levels of Evidence Pyramid**

Systematic reviews and meta-analyses of randomised controlled trials represent Level 1a, the highest quality evidence with the lowest risk of bias. Individual randomised controlled trials with narrow confidence intervals represent Level 1b with high quality and low dogma risk. Systematic reviews of cohort studies represent Level 2a with moderate-high quality. Individual cohort studies and low-quality randomised controlled trials represent Level 2b with moderate quality and moderate-high dogma risk. Systematic reviews of case-control studies represent Level 3a with moderate-low quality. Individual case-control studies represent Level 3b with low quality and high dogma risk. Case series and low-quality cohort or case-control studies represent Level 4 with very low quality and very high dogma risk. Expert opinion and mechanistic studies without empirical evidence constitute Level 5, the lowest quality and highest dogma risk [8].

**Dogmatic practices typically rely on Level 4-5 evidence** such as expert opinion, case reports, and mechanistic reasoning despite the availability of higher-level evidence.

**The 5 A's of Evidence-Based Practice**

**Systematic Approach to EBM**

**Ask**: Formulate answerable clinical questions using PICO format using question templates, requiring 2-5 minutes. The PICO format includes Patient/Problem describing who the patient is and what the clinical problem is, Intervention describing what you are considering doing, Comparison describing what you are comparing it to, such as an alternative, placebo, or no treatment, and Outcome describing what you hope to achieve, such as improved survival, reduced symptoms, or better quality of life.

**Acquire**: Search for the best evidence from authoritative sources, including Cochrane Library, PubMed, UpToDate, and guideline databases, which takes 5-15 minutes.

**Appraise**: Critically evaluate evidence quality and applicability using critical appraisal checklists and CASP tools, requiring 15-30 minutes.

**Apply**: Integrate evidence into clinical practice with the patient through shared decision-making and treatment planning, with variable time requirements.

**Assess:** Evaluate outcomes of practice change using audit tools and outcome measures on an ongoing basis.

**Example PICO Question:** "In adults with acute low back pain (P), does early mobilisation (I) compared to bed rest (C) improve recovery time and functional outcomes (O)?"

**Critical Thinking in Clinical Practice**

**Critical Thinking Components for Clinicians**

**Questioning** involves asking "What's the evidence?" for every practice, applied before ordering tests, prescribing medications, or performing procedures. **Analysis** involves breaking down complex problems into components, which is applied in differential diagnosis and in evaluating multiple treatment options. **Evaluation** involves assessing the quality of evidence and arguments, which is used to distinguish high-quality RCTs from case reports. **Inference** involves drawing logical conclusions from evidence, applied in making treatment decisions based on the best available data. **Explanation** involves clearly articulating reasoning to patients and colleagues and is applied to justify treatment choices and informed consent. **Self-regulation** involves reflecting on one's own thinking and biases, applied in recognising confirmation bias in diagnostic reasoning.

**Teaching Strategies for Critical Thinking**

Case-Based Learning (CBL) uses real clinical scenarios requiring analysis and decision-making. Problem-Based Learning (PBL) has students identify knowledge gaps and seek evidence. Journal Clubs provide critical appraisal of

research articles using structured checklists. Morbidity & Mortality (M&M) Meetings analyse errors and learn from mistakes without blame. Socratic Questioning challenges assumptions through systematic questioning. Clinical Reasoning Workshops provide explicit teaching of diagnostic and therapeutic reasoning.

**Medical Education Reform**

**Current vs Reformed Medical Education**

Current approaches emphasise memorising facts from textbooks, learning from textbooks only, passive lectures, single correct answers, the senior authority being final, and no discussion of errors. Reformed approaches emphasise learning to find and appraise evidence; learning from primary literature and guidelines; active learning through PBL and case discussions; multiple evidence-based approaches; expert opinions that require evidence; and open discussion of errors and learning.

**Specific Recommendations for Medical Schools**

Integrate EBM in Year 1 so first-year medical students learn research methodology and critical appraisal. Require Journal Club participation so all students lead at least 2 critical appraisals before graduation. Include a research component as a mandatory research project for graduation in clinical, basic science, or public health areas. Update Continuing Education so CPD includes critical appraisal skills training—Reform Assessment to test critical thinking and clinical reasoning, not just recall. Implement Simulation-Based Learning to practice clinical skills in a safe environment before patient contact.

**Quality Improvement Framework**

**Systematic Quality Improvement Cycle**

**Step 1: Identify Problem** includes auditing current practices, comparing with evidence-based guidelines from Cochrane, WHO, and NICE, identifying gaps and dogmas, and measuring baseline metrics.

**Step 2: Review Evidence** includes conducting a systematic literature search, consulting authoritative guidelines from Cochrane, UpToDate, and speciality sources, assessing applicability to context, and grading the quality of evidence.

**Step 3: Implement Change** includes updating protocols and guidelines, educating staff through workshops and CME, providing necessary resources, creating support systems, and addressing barriers to change.

**Step 4: Measure Outcomes** includes pre/post comparison, process measures such as adherence percentage, outcome measures including mortality, morbidity, and complications, patient satisfaction, and cost analysis.

**Step 5: Sustain & Improve** includes standardising successful changes, monitoring for drift over time, continuing the improvement cycle, and disseminating results.

**Key Performance Indicators (KPIs)**

Process KPIs include adherence to evidence-based guidelines, with a target of greater than 85% measured through medical record audits, and a reduction in unnecessary tests and procedures, with a target of greater than 30% measured through billing data and order logs. Outcome KPIs include patient mortality rate percentage with a target of decrease measured through the hospital mortality registry, complication rate percentage with a target of decrease measured through the morbidity reporting system, and hospital-acquired infection rate percentage with a target of less than 5% measured through infection control surveillance. Patient KPIs include the patient satisfaction score on a 1-10 scale, with a target greater than 8.5, measured through patient surveys. Financial KPIs include cost per case in Naira with a target of decrease measured through hospital financial records. Professional KPIs include the doctor's knowledge retention percentage, with a target of greater than 80%, measured through pre- and post-CPD testing.

**Intellectual Humility in Medical Practice**

**Characteristics of Intellectually Humble Clinicians**

**Acknowledge uncertainty** involves saying "I don't know; let me find out," exemplified by statements like "I'm not certain about the best treatment. Let me check the guidelines." Admitting **mistakes** involves openly discussing errors without defensiveness, exemplified by "I made an error in judgment. Here's what I learned." **Welcome challenges** involve seeing questioning as an opportunity for learning, exemplified by "Thank you for questioning my approach. Let's review the evidence together." **Update beliefs** involves changing one's mind when evidence contradicts, as exemplified by "The new evidence changes my thinking. I'll adjust my approach**."**

**Valuing others' input i**nvolves respecting colleagues' perspectives, exemplified by "Your experience is valuable. Let's integrate it with the evidence." **Recognising biases** involves self-awareness of cognitive biases, exemplified by "I may have confirmation bias here. Let me look for contradictory evidence."

### Creating Psychologically Safe Environments

Establish a no-blame culture focusing on system improvement, not individual punishment. Foster psychological safety so staff feel safe questioning practices without fear of retribution. Ensure open communication through regular forums for discussing concerns, including grand rounds and M&M meetings—secure leadership support so administrators actively support evidence-based changes. Provide recognition and rewards acknowledging clinicians who challenge outdated practices.

### Continuing Professional Development (CPD) Reform

### CPD Reform Recommendations

Current CPD models emphasise passive lectures, memorisation of guidelines, one-size-fits-all approaches, no evaluation, point-focused systems, and isolated events. Reformed CPD models emphasise active learning through workshops, case discussions, and simulations; critical appraisal of guidelines; needs-based and speciality-specific approaches; pre- and post-testing and behaviour change measurement; competency-focused systems; and continuous learning through online platforms, journal clubs, and mentorship.

### MDCN Requirements (Nigeria)

Minimum 20 CPD credit units per year for license renewal [12]. A mix of activity types, including formal, work-based, professional, and self-directed [13]. Accreditation by MDCN for CPD points validity [14].

### Best Practices for CPD

Include critical appraisal sessions in all CPD activities. Require reflection notes on how learning will change practice. Conduct skills demonstrations with competency checklists. Track behaviour change 3-6 months after CPD. Measure patient outcome improvements 6-12 months after CPD. Provide certificates with CPD points on the same day.

### Research and Local Evidence Generation

### Research Priorities for the African/Nigerian Context

**Local disease epidemiology** is a high priority because Western data may not reflect the Nigerian burden, with funding sources including TMF, WHO, and NIHR. **Cost-effectiveness studies** are high priority because resource-limited settings need different priorities, with funding sources including TDH and Wellcome Trust. Implementation research is a high priority for understanding how to adapt guidelines to local contexts, with funding sources including EDCTP and NIH. **Traditional medicine evaluation** is a medium-to-high priority for the scientific validation of herbal remedies, with funding from NABTU and WHO. **Health systems research** is a high priority for understanding how to improve delivery in resource-poor settings, with funding from USAID and the World Bank. **Pharmacokinetic studies** are of medium priority because drug metabolism may differ by population, with funding sources including pharmaceutical companies and universities. **Diagnostic accuracy studies** are of medium priority for the validation of tests in local populations, with funding from WHO and FIND.

### Institutional Support Needed

Research funding from government and NGOs should aim for 1-2% of the health budget. Ethics review boards for clinical trials, including IRB and ERC, are essential. Research training for clinicians through MSc and PhD programs is necessary. Collaboration with international partners, including the London School of Hygiene and Tropical Medicine, Harvard, and Oxford, is important. Open access to research publications through institutional subscriptions is required. Incentives for research, including promotion points, awards, and protected time, are necessary.

### Technology and Digital Health

### Digital Tools for Combating Medical Dogmas

**Clinical Decision Support Systems (CDSS), including Epic, Cerner, and OpenMRS,** integrate evidence into electronic health records, improving guideline adherence

[4]. **Mobile apps, including UpToDate, Medscape, the MDCN app, and WHO guidelines, provide access to point-of-care evidence**, enabling faster decision-making [2]. **Online Learning Platforms, including Coursera, Medscape CME, WHO e-learning, and WACP courses,** enable continuous education that is accessible anywhere [15]. **Point-of-Care Testing**, including rapid diagnostic tests for malaria, HIV, and strep, reduces unnecessary testing and is cost-effective [6]. **Telemedicine**, including Doctor-a-distance and Helium Health, provides specialist input to support evidence-based decision-making, improving access. **Electronic Health Records (EHR), including OpenMRS and FreeHealth,** provide audit tools, guideline reminders, and decision support. **AI and Machine Learning** provide pattern recognition and predictive analytics.

**Implementation Barriers**

Internet connectivity in rural areas remains challenging. The cost of devices and subscriptions is prohibitive for many. Digital literacy among healthcare workers varies significantly. Data privacy and security concerns must be addressed. Integration with existing systems requires technical expertise.

**Practical Framework for Clinicians**

**Daily Practice Checklist**

Before implementing any clinical practice, ask these seven questions:

**What is the evidence?** Is there high-quality research supporting this practice? **What do the guidelines say?** Check WHO, NICE, and speciality society guidelines. **Is this appropriate for this patient?** Consider age, comorbidities, and preferences. **What are the risks vs benefits?** Ensure balanced consideration. **Are there better alternatives?** Consider more effective, safer, or cheaper options. **What does the patient want?** Engage in shared decision-making. **Am I doing this because it's tradition?** Question individual dogma.

**Steps to Challenge a Medical Dogma**

**Step-by-Step Process**

**Step 1: Identify the Dogm**a includes determining what practice is being questioned, who is doing it and why, and whether it is widespread or isolated.

**Step 2: Formulate Clinical Question (PICO)** includes specifying Patient/Problem (who), Intervention (what are you considering), Comparison (what are you comparing it to), and Outcome (what do you hope to achieve).

**Step 3: Search for Evidence** includes searching PubMed, Cochrane, and UpToDate, prioritising systematic reviews over RCTs over observational studies, and assessing the quality of evidence.

**Step 4: Critically Appraise** includes evaluating the study design, sample size, and potential bias, distinguishing statistical significance from clinical relevance, and assessing the applicability to your patient and context.

**Step 5: Present to Colleagues** includes a journal club presentation, a departmental meeting, and the use of respectful, evidence-based language.

**Step 6: Implement Change (if evidence supports)** includes updating protocols, educating staff, and monitoring outcomes.

**Step 7: Disseminate Results** includes publishing internally, presenting at conferences, and sharing with broader community.

**Institutional Assessment Tool**

**Evaluate your institution's dogma susceptibility**

Ask these ten questions and count Yes answers: Does the institution have evidence-based protocols? Are guidelines regularly updated every 2-3 years? Is there a journal club or critical appraisal program? Do staff feel safe questioning practices? Are errors discussed openly without blame? Is CPD focused on competency, not just points? Is there research support for clinicians? Are patients involved in decision-making? Is there a quality improvement program? Does leadership support evidence-based changes?

**Scoring**:

9-10 Yes answers indicate the institution is evidence-based with low dogma susceptibility. 6-8 Yes answers indicate moderate dogma susceptibility requiring targeted

improvements. 0-5 Yes answers indicate high dogma susceptibility requiring comprehensive reform.

## CASE STUDIES

### Case Study 1: Bed Rest for Acute Back Pain

**The Dogma:** Traditional teaching recommended 2-4 weeks of bed rest for acute lower back pain.

**Origin:** Historical belief that rest allows healing and provides analgesia during rest.

**Evidence Against**: Systematic reviews show early mobilisation leads to faster recovery. Bed rest causes muscle atrophy, depression, and venous thromboembolism. Activity modification, not bed rest, is recommended. Cost savings result from reduced disability.

**Resolution:** Current guidelines from ACCP and NICE recommend staying active as tolerated, avoiding bed rest, using analgesia for pain control, and providing physical therapy if persistent.

**Impact**: Recovery duration reduced by 50% with cost savings of $1,000+ per patient [7].

### Case Study 2: Antibiotic Overprescribing in Nigeria

**The Dogma: Antibiotics** should be prescribed for all respiratory infections.

**Origin**: Habit, patient expectation, and fear of missing a bacterial infection.

**Evidence Against**: 80-90% of upper respiratory infections are viral, so antibiotics have no benefit. Antibiotic resistance is increasing in Nigeria. Adverse effects include diarrhoea, allergic reactions, and C. difficile. The cost burden falls on patients.

**Evidence For:** Antibiotics are only indicated for proven bacterial infections, including pneumonia, strep throat, and urinary tract infections.

**Intervention**: Antibiotic stewardship program at a teaching hospital, educational campaigns for physicians and patients, rapid diagnostic tests including strep antigen and urine dipstick, and prescription auditing.

**Outcome:** 40% reduction in antibiotic prescribing, improved patient satisfaction, reduced resistance rates, and cost savings for patients.

### Case Study 3: Routine Preoperative Testing

**Evidence**: All patients should have a CBC, electrolytes, a chest X-ray, and an ECG before surgery.

**Origin:** Defensive medicine and habit from historical practice.

**Evidence Against:** Low yield in healthy patients undergoing low-risk surgery. False positives lead to unnecessary additional testing. Cost waste of ₦50,000-₦100,000 per patient unnecessarily. Surgery delays occur for abnormal results requiring workup.

**Evidence For:** Testing based on clinical indication and surgical risk.

**Guideline Recommendations:** ASA I-II patients undergoing low-risk surgery require no routine testing. ASA III-IV patients or high-risk surgery require targeted testing based on comorbidities. Canadian Preoperative Risk Stratification guidelines apply.

**Implementation**: Preoperative assessment clinic with standardised protocols, electronic order sets with decision support, and education for surgeons and anesthesiologists.

**Outcome:** 60% reduction in preoperative testing, no increase in complications, cost savings of ₦200 million annually, and faster surgery scheduling.

## CONCLUSION

### Summary of Key Points

**Medical dogmas** are pervasive in healthcare and stem from historical traditions, including Hippocratic and Galenic medicine, authority-based learning without questioning, lack of evidence in early medicine, pharmaceutical industry influence, cultural and societal beliefs, institutional inertia, and cognitive biases in clinical decision-making.

**The implications are severe:** direct patient harm from ineffective or harmful treatments; wasted healthcare resources that represent 20-30% of spending; stifled innovation and scientific progress; medical errors and patient safety issues; erosion of public trust; professional stagnation; and a disproportionate impact in resource-limited settings.

**The way forward requires a multi-faceted approach:** Embrace evidence-based medicine as the foundation of practice, develop critical thinking skills in medical education, reform medical education to emphasize analysis over memorization, implement quality improvement programs to audit practices, foster intellectual humility and open discussion, strengthen CPD with critical appraisal and behavior change, promote local research especially in African/Nigerian context, leverage technology for clinical decision support, engage patients in shared decision-making, and implement regulatory reforms at policy level.

**Call to Action**

**For Medical Students and Residents:** Question every practice by asking "What's the evidence?" Learn evidence-based medicine early. Participate in research and journal clubs. Challenge outdated practices respectfully.

**For Practising Clinicians**: Regularly update knowledge through CPD. Audit your own practice against guidelines. Be open to changing practices when evidence contradicts. Teach critical thinking to students and residents. Participate in quality improvement initiatives.

**For Medical Educators:** Reform curriculum to emphasise EBM. Include critical appraisal in all courses. Create safe environments for questioning—model intellectual humility.

**For Hospital Administrators**: Implement evidence-based protocols. Support quality improvement programs. Provide resources for research and CPD. Create a no-blame culture for errors.

**For Policymakers (MDCN, FMoH):** Strengthen CPD accreditation requirements. Develop evidence-based national guidelines—fund research challenging dogmas. Regulate pharmaceutical marketing.

**For Patients:** Ask questions about recommended tests and treatments. Seek second opinions when uncertain. Share your values and preferences. Participate in shared decision-making.

**Final Thoughts**

Medicine is not a static discipline but a **dynamic, evolving science** that requires constant re-evaluation. The **dogmas of today may be the discoveries of tomorrow** and vice versa. As healthcare professionals, our primary obligation is to **patient welfare**, and this requires us to remain humble about what we know, stay curious about what we don't know, be willing to change when evidence demands it, teach critical thinking to the next generation, and champion evidence-based practice in our institutions.

**The death of dogma is the birth of science in medicine** [7]. By systematically challenging outdated practices, embracing evidence, and fostering a culture of critical inquiry, we can advance healthcare quality, improve patient outcomes, and fulfil our ethical obligation to provide the best possible care.

This is not merely an academic exercise—it is a **moral imperative** for the benefit of current and future patients. By systematically implementing evidence-based medicine principles, developing critical thinking skills, reforming medical education, implementing quality improvement programs, fostering intellectual humility, strengthening continuing professional development, promoting local research, leveraging technology, engaging patients, and implementing regulatory reforms, we can overcome the burden of medical dogmas and advance healthcare for all.

**Conflict of Interest:** The author declares no conflict of interest.

**Funding:** This work received no external funding.

**REFERENCES**

1. Dietert RR, Dietert JM. Twentieth-century dogmas prevent sustainable healthcare. *Am J Biomed Sci Res.* 2021;13(4):409-417.
2. Guyatt G, Rennie D, Meade MO, Cook DJ. Users' guides to the medical literature: essentials of evidence-based clinical practice. 3rd ed. Chicago (IL): JAMA Evidence; 2015.
3. Sackett DL, Rosenberg WMC, Grey JAM, Haynes RB, Richardson WS. Evidence-based medicine: what it is and what it isn't. *BMJ.* 1996;312(7023):71-72.
4. Singer M, Lin J, Tran A, Baez A, Neradilek M, Washington R, et al. Challenging management dogma where evidence is non-existent. *BMJ Qual Saf.* 2022;31(5):385-392.
5. Makary MA, Daniel M. Medical error—the third leading cause of death in the US. *BMJ.* 2016;353:i2139.

6. World Health Organization. Patient safety [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Sep 6]. Available from: https://www.who.int/news-room/fact-sheets/detail/patient-safety
7. Sumner W. The death of dogma and the birth of science in medicine. Sort of. LinkedIn [Internet]. 2018 Aug 11 [cited 2026 Sep 6]. Available from: https://www.linkedin.com/pulse/deth-dogma-birth-science-medine-sort-w-sumner
8. Pubrica Academy. Evidence-based medicine: levels of evidence & meta-analysis [Internet]. Sarasota (FL): Pubrica; 2025 Jan 29 [cited 2026 Sep 6]. Available from: https://pubrica.com/academy/study-guide/research-writing/evidence-based-medicine-levels-evidence-meta-analyses/
9. Encyclopaedia Britannica. History of medicine [Internet]. Chicago (IL): Encyclopaedia Britannica; 2026 Apr 18 [cited 2026 Sep 6]. Available from: https://www.britannica.com/science/history-of-medicine
10. FinalSite. Approaches to prevention and treatment 2 [Internet]. Lewisham (UK): Sydenham Lewisham School; 2011 [cited 2026 Sep 6]. Available from: https://resources.finalsite.net/images/v1553547482/sydenhamlewishamschuk/cqt7rpnhwhkbflgmgnaj/M-Med.pdf
11. Moher D, Shamseer L, Clarke M, Ghersi D, Liberati A, Petticrew M, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Syst Rev*. 2015;4(1):1.
12. Medical and Dental Council of Nigeria. CPD requirements for medical practitioners [Internet]. Abuja: Medical and Dental Council of Nigeria; 2025 [cited 2026 Sep 6]. Available from: https://www.mdcn.gov.ng
13. CapacityPlus. Continuing professional development for health workers [Internet]. Ithaca (NY): CapacityPlus; 2013 [cited 2026 Sep 6]. Available from: https://capacityplus.org
14. Medical and Dental Council of Nigeria. CPD accreditation guidelines [Internet]. Abuja: Medical and Dental Council of Nigeria; 2025 [cited 2026 Sep 6]. Available from: https://www.mdcn.gov.ng
15. WONCA. Global standards for continuing professional development [Internet]. Copenhagen: WONCA; 2020 [cited 2026 Sep 6]. Available from: https://www.wonca.net