

Comparative analysis of international and Malaysia approaches to the treatment of patients with chronic gastritis from the point of view of evidence-based medicine.

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Abstract

Background: Chronic gastritis, often resulting from *Helicobacter pylori* infection, is a widespread gastrointestinal disorder. The condition requires evidence-based treatment approaches to ensure effective management and improved patient outcomes. This study conducts a comparative analysis of the treatment approaches for chronic gastritis in Malaysia and internationally, focusing on adherence to evidence-based medicine (EBM) practices. Understanding the similarities and differences in these approaches is critical for enhancing Malaysia's healthcare strategies.

Methods and Materials: The study employed a systematic review of relevant literature sourced from global medical databases, including PubMed, Embase, and Cochrane Library. The review focused on therapeutic options, diagnostic standards, and evidence-based protocols for managing chronic gastritis, with emphasis on both international and Malaysian healthcare systems. Studies included in the review primarily focused on adult patients diagnosed with chronic gastritis and treated using evidence-based methodologies.

Results: The analysis revealed significant parallels in the treatment protocols between Malaysia and international guidelines, particularly in the use of proton pump inhibitors (PPIs) and antibiotic regimens for *H. pylori* eradication. However, differences emerged in the implementation of advanced diagnostic tools, accessibility of healthcare services, and the influence of local antibiotic resistance patterns. While Malaysia follows global best practices, rural-urban healthcare disparities impact the consistency of treatment delivery and patient outcomes.

Conclusion: Both international and Malaysian approaches to chronic gastritis prioritize evidence-based medicine. The findings suggest that Malaysia effectively adapts international guidelines to its local healthcare context, though improvements are needed in addressing healthcare accessibility and antibiotic resistance. Enhanced implementation of EBM practices, particularly in rural areas, and personalization of treatment based on resistance patterns, could further optimize patient outcomes in Malaysia.

Keywords: Chronic gastritis, Evidence-based medicine, *Helicobacter pylori* treatment, Malaysia healthcare system, Antibiotic resistance

List of abbreviations

EBM- Evidence-based medicine

ACG- American College of Gastroenterology

EHMSG -European Helicobacter and Microbiota Study Group

MOH- Ministry of Health

PPI- proton pump inhibit

Introduction:

Relevance of topic

Chronic gastritis is a condition in which the stomach lining is damaged long-term, often due to infection by *H. pylori*. Chronic gastritis does not usually cause indigestion or pain, but severe damage may result in anemia due to vitamin B12 deficiency [1]. A comprehensive strategy involving dietary adjustments, pharmaceutical interventions, and lifestyle modifications is needed to address chronic gastritis [2]. When it comes to helping medical practitioners make decisions about treating patients with chronic gastritis, evidence-based medicine (EBM) is essential [3].

Healthcare practitioners in Malaysia must comprehend the global strategies for treating chronic gastritis and contrast them with Malaysia's approach. The usefulness and efficiency of various treatment approaches will be clarified by this comparison, taking into account the local environment and resource availability. Additionally, it will assist in discovering any weaknesses or potential areas for enhancement in Malaysia's current management practices.

Problem Statement

Individuals from all over the countries suffer from chronic gastritis, a common gastrointestinal ailment that is managed and treated differently depending on the patient. Although evidence-based medicine is becoming increasingly important, there are still not enough thorough comparison studies comparing the approaches taken by Malaysian and foreign healthcare systems to treat chronic gastritis patients. In order to close this gap, this study compares and analyzes the evidence-based procedures and results of treatment for managing chronic gastritis in Malaysian and International healthcare systems. The goal is to find possible areas for patient care standardization and improvement.

Aim of study

This research aims to assess, from the standpoint of evidence-based medicine, how Malaysia treats patients with chronic gastritis compared to other countries. By doing this, we hope to find parallels, divergences, advantages, and disadvantages in the therapeutic approaches used in many nations, ultimately leading to better patient outcomes and the most efficient use of Malaysia's healthcare resources.

Project Goals and Objectives

This capstone project has 5 goals:

1. Review and compile the body of knowledge regarding evidence-based strategies for treating chronic gastritis worldwide.

2. Assess Malaysia's current chronic gastritis treatment guidelines and methods.
3. Contrast Malaysia's strategy with that of other countries when it comes to treating chronic gastritis with an emphasis on the concepts of evidence-based medicine.
4. Discuss any weaknesses or places where Malaysia's management practices should be strengthened.
5. Initiate suggestions for improving the care of patients with chronic gastritis in Malaysia based on worldwide best practices.

Materials and Methods

Using a systematic review methodology, this study will compile pertinent material from various worldwide databases, including PubMed, Embase, and the Cochrane Library, on managing chronic gastritis. Keywords associated with therapeutic options,

evidence-based medicine, chronic gastritis, and international comparisons will all be part of the search strategy. Studies with an English language publication, an emphasis on adult patients with chronic gastritis, and the application of evidence-based treatment approaches will be required for inclusion.

Practical Significance

Researchers, politicians, and healthcare professionals in Malaysia will find use for the study's recommendations. Through a comparative analysis of global methods for managing chronic gastritis, optimal practices can be recognized and integrated into the regional healthcare framework. By helping to create evidence-based guidelines tailored to Malaysia's unique circumstances, this research will eventually improve patient outcomes and treatment when treating chronic gastritis.

Chapter 1: International & Malaysia's Diagnostic Approaches to Chronic Gastritis

1.1 International Diagnostic Standards & Guidelines and Protocols

Advanced diagnostic techniques encompass endoscopy, biopsies, urea breathalyzer, and serological Testing. An endoscope, a flexible tube equipped with a light and camera, is put into the digestive tract during an endoscopy operation to visually inspect the duodenum, stomach, and oesophagus. The technique is crucial for identifying anomalies such as inflammation, tumors, and ulcers [4]. The most accurate, precise, and sensitive diagnostic technique for evaluating individuals exhibiting alarming gastro-oesophageal symptoms is gastric endoscopic inspection in conjunction

with biopsy sampling. Doing a biopsy during an endoscopy is possible by removing tiny tissue samples from the stomach lining. After that, these samples undergo histological analysis to identify diseases like gastritis or cancer as well as infections like *Helicobacter pylori* [5]. The non-invasive urea breath test is mainly used to identify *Helicobacter pylori* infections. The urea solution the patients consume is labeled with an isotope (carbon-14 or carbon-13). Carbon dioxide is discovered in the patient's breath if *H. pylori* is present because it breaks down urea [6]. In serological assays, blood samples are analyzed for antibodies against infections such as *Helicobacter pylori*. These tests can reveal prior or current illnesses and are effective for preliminary screening [7].

In addition, there are several global conventions & regulations to adhere to. For instance, the American College of Physicians (ACG) has thorough guidelines for diagnosing and treating gastrointestinal problems. These recommendations are supported by evidence and are revised frequently to consider discoveries in science and technology. They cover a wide range of topics, including the proper use of non-invasive Testing, biopsy techniques, and endoscopic indications. Furthermore, the research on *Helicobacter pylori* and its effects on the gastrointestinal system is a focus of EHMSG [8]. To enhance patient outcomes, the EHMSG encourages the use of cutting-edge diagnostic instruments, testing approach standardization, and international research community collaboration[9].

Endoscopic	Non-endoscopic
<ul style="list-style-type: none"> • Obtain topographical biopsies to determine anatomic extent and histologic severity for risk stratification 	<ul style="list-style-type: none"> • Test for <i>H pylori</i>, treat if positive and confirm eradication
<ul style="list-style-type: none"> • Surveillance endoscopy should be considered in patients with* <ul style="list-style-type: none"> ◦ Advanced AG: every 3 years ◦ AIG: interval based on individualized assessment (see text) 	<ul style="list-style-type: none"> • Evaluate for anemia
<ul style="list-style-type: none"> • In patients with newly diagnosed PA, upper endoscopy should be considered for risk stratification and to evaluate for prevalent gastric neoplasia and NETs 	<ul style="list-style-type: none"> • Evaluate for micronutrient deficiencies, such as iron and vitamin B12 (irrespective of anemia)
<ul style="list-style-type: none"> • Evaluate for NETs and manage accordingly (see text) 	<ul style="list-style-type: none"> • In patients with AIG <ul style="list-style-type: none"> ◦ Screen for autoimmune thyroid disease ◦ Low threshold to evaluate other autoimmune diseases based on clinical presentation (e.g. type I diabetes)
	<ul style="list-style-type: none"> • Check PCA and IFA in patients with endoscopic/histologic findings consistent with AIG**

*For AIG and advanced AG, surveillance should be based on shared decision-making and individual risk assessment. Advanced AG is defined based on 1) anatomic extent and 2) histological grade.

**Endoscopic findings include corpus-predominant pattern with antral sparing; histological findings include oxyntic mucosa atrophy with lymphoplasmacytic infiltrate.

Figure 1: Diagnostic methods of Chronic gastritis

1.2 Malaysia's Diagnostic Practices

In Malaysia, there are notable differences in the accessibility of sophisticated diagnostic instruments, including endoscopy, biopsy, urea breath tests, and serological tests, between urban and rural areas. Urban areas with advanced diagnostic technology and state-of-the-art healthcare facilities include Kuala Lumpur, Penang, and Johor Bahru [10]. On the other hand, rural areas frequently confront outdated equipment, an inadequate number of skilled medical workers, and restricted access to healthcare facilities [11]. This discrepancy might cause rural residents to have delayed diagnosis and treatment, underscoring the necessity of focused initiatives to narrow the healthcare gap between urban and rural areas.

Moreover, Malaysia's healthcare system amends to global diagnostic guidelines, such as the European Helicobacter and Microbiota Study Group (EHMSG) and the American College of Gastroenterology (ACG) [12]. Ministry of Health Malaysia has established the national clinical guidelines, which are personalized to every individual taking into consideration the variables. This includes disease prevalence, availability of resources, and healthcare delivery systems. These standards enhance patient outcomes and care quality by ensuring that diagnostic and treatment procedures are uniform throughout the nation [13]. The MOH takes into account the capabilities of the local healthcare system while modifying international norms. The use of endoscopy and biopsy for correct diagnosis may be emphasized in guidelines in metropolitan regions where access to advanced diagnostic techniques is more convenient [14]. The guidelines may prefer easily implemented non-invasive Testing, such as urea breath tests and serological tests in remote locations where access to such equipment may be restricted [15]. To increase diagnostic capacity and lessen health inequities, there is also a continuous push to improve healthcare infrastructure and training in rural regions [16].

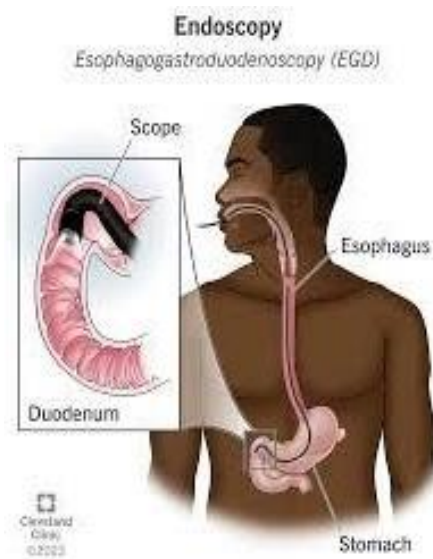


Figure 2: Endoscopy for diagnosis of chronic gastritis

Chapter 2: Treatment Protocols

2.1 International Treatment Strategies

Proton pump inhibitors and antibiotics are commonly used in conjunction as eradication therapy for *Helicobacter pylori* infections (PPIs). A PPI such as omeprazole or esomeprazole is frequently used in conjunction with two antibiotics, such as clarithromycin and amoxicillin (or metronidazole for patients allergic to penicillin), as part of the conventional treatment regimen [16]. While the PPI lessens the generation of stomach acid and, therefore, creates a less acidic environment, the antibiotics aim to kill the bacteria and encourage the regeneration of the gastric mucosa [17]. When treating *H. pylori*, personalized therapy considers the rising incidence of antibiotic resistance. Global observations of resistance to widely used antibiotics, such as metronidazole and clarithromycin, have made susceptibility testing necessary to inform antibiotic selection [18].

Customizing the treatment to the patient's unique strain of *H. pylori* increases the likelihood of a successful eradication. Moreover, patient-specific variables such as allergies, prior antibiotic exposure, and co-occurring medical disorders are taken into account in personalized treatment plans [19]. For instance, metronidazole is used instead of amoxicillin in patients who are allergic to penicillins. Other variables like patient age, comorbidities, and local resistance patterns are considered to maximize therapy results. Treatment plans tailored to each patient are designed to maximize effectiveness, minimize side effects, and lower the chance of acquiring new antibiotic resistance [20].

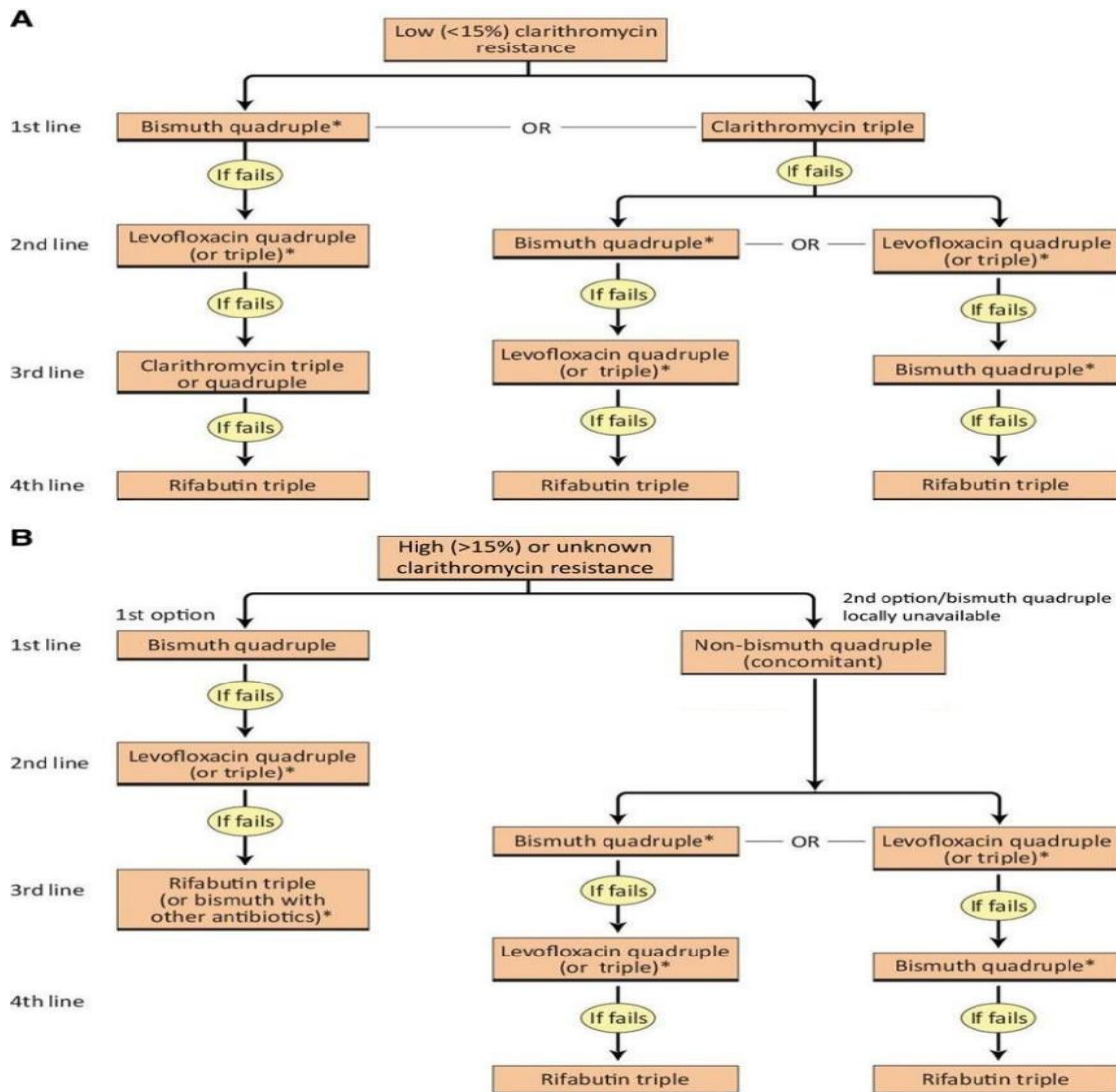


Figure 3. Algorithm for empirical *Helicobacter pylori* eradication

2.2 Malaysia's Treatment Approach

A combination of two antibiotics and a proton pump inhibitor (PPI) is usually the standard treatment regimen for *Helicobacter pylori* infection in Malaysia. The most often prescribed antibiotics are amoxicillin and clarithromycin, with metronidazole as a backup for penicillin-allergic patients. These antibiotics are used with proton pump inhibitors (PPIs) such as pantoprazole, omeprazole, or esomeprazole to decrease gastric acid output and increase the efficacy of antibiotics [21]. The typical course of treatment lasts 7–14 days, and in a considerable number of patients, this has been demonstrated to effectively clear the illness. Treatment approaches in Malaysia are greatly influenced by local antibiotic resistance patterns [13]. A growing emphasis is placed on conducting antibiotic susceptibility testing prior to initiating treatment because of the established resistance to metronidazole and clarithromycin. Alternative antibiotics like levofloxacin or a quadruple therapy involving bismuth (tetracycline, bismuth, and a PPI) are advised when clarithromycin resistance is found [22]. Personalizing the medication to the

patient's unique resistance patterns increases the chances of successful eradication.

Furthermore, another significant factor influencing treatment methods in Malaysia is the availability of drugs. Rural locations could face restrictions, even while urban areas have better access to a wider variety of PPIs and antibiotics. This discrepancy may influence the selected treatment plans, as medical professionals in rural areas frequently depend on the more easily accessible drugs. Although the Malaysian Ministry of Health (MOH) works hard to guarantee that all citizens have access to necessary medications, problems with the supply chain and delivery may still leave gaps [23]. In order to guarantee equal healthcare delivery and standardized treatment methods across the country, ongoing efforts are concentrated on enhancing the consistency of medicine supply.

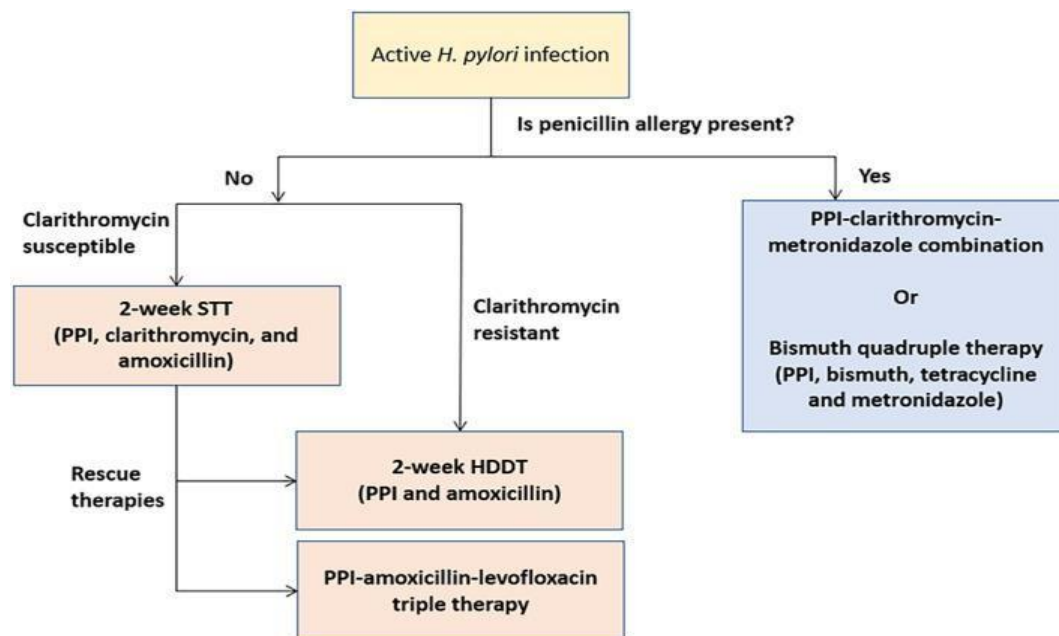


Figure 4. The algorithm for the selection of Helicobacter Pylori eradication program

Chapter 3: Healthcare Accessibility and Patient Outcomes

3.1 International Healthcare Systems: Accessibility to advanced care

There are notable differences in healthcare accessibility between urban and rural communities worldwide. Higher quality care and better health outcomes result from urban centers' larger hospital capacity, greater number of medical personnel, and easier access to cutting-edge medical technologies [2]. On the other hand, rural communities frequently have difficulties such as a lack of healthcare facilities, a shortage of medical professionals, and lengthier travel time to get care. These issues can cause delayed diagnosis, insufficient treatment, and worse health outcomes for the people living in rural areas. Efficient healthcare systems use strict follow-up procedures to guarantee service continuity and track patient results. These protocols include arranged consultations, frequent evaluations of the effectiveness of treatment, and prompt modifications to treatment regimens [24].

Maintaining chronic conditions, halting the course of disease, and enhancing patients' general health all depend on follow-up care. Comprehensive approaches, such as medication adherence, lifestyle adjustments, frequent monitoring, and patient education, are necessary for managing chronic diseases [25]. Integrated care models play a critical role in improving patient outcomes and managing chronic diseases effectively by coordinating services across various healthcare levels.

3.2 Malaysia's Healthcare System

In Malaysia, the public and private sectors coexist in the healthcare system. Government-run hospitals and clinics that offer public healthcare provide subsidized, cost-effective services. Although the general public can use these facilities, they frequently have problems, including crowding and lengthy wait periods [26]. Because private healthcare institutions are more expensive and provide speedier, more specialized services, lower-income groups are less able to access them. Malaysia's healthcare system exhibits notable regional variations.

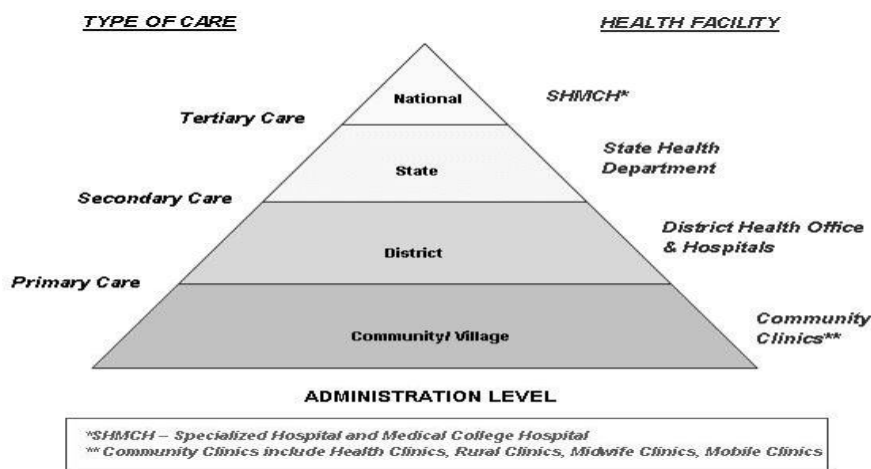


Figure 5: Healthcare system in Malaysia

Compared to rural areas, particularly in East Malaysia (Sabah and Sarawak), urban areas, particularly in West Malaysia, have more sophisticated healthcare facilities and a higher concentration of healthcare professionals [27]. Due to these differences, there is unequal access to healthcare services, and rural communities are more likely to have difficulty receiving timely and sufficient care. The frequency of antibiotic resistance, the accessibility of healthcare, and the adherence to clinical recommendations all have an impact on how effective treatment regimens are in Malaysia [28]. Standardized treatment regimens have demonstrated efficacy in the eradication of *Helicobacter pylori* infection and have been associated with improved patient outcomes. Overall

efficacy, however, can be impacted by differences in pharmaceutical accessibility and treatment approaches. Effective healthcare management in Malaysia requires ongoing patient monitoring and assistance [29]. This includes patient education, continuous follow-up care, and lifestyle modifications. To foster better long-term care, the Malaysian Ministry of Health has launched several projects that use community-based initiatives and digital health technologies to monitor health outcomes and promote patient adherence [30].

Table 1. International & Malaysia's approach on different aspects

Aspect	International Approach	Malaysia's Approach
Diagnostic method	Endoscopy, biopsy, urea breath test, stool antigen test	Endoscopy, biopsy, urea breath test, stool antigen test
Common causes	H. pylori infection, NSAIDs, alcohol, stress	H. pylori infection, dietary habits, NSAIDs, traditional medicine usage

Initial treatment	Proton pump inhibitors (PPIs), antibiotics for H. pylori	Proton pump inhibitors (PPIs), antibiotics for H. pylori
Antibiotic regimen	Clarithromycin-based triple therapy, bismuth quadruple therapy	Clarithromycin-based triple therapy, bismuth quadruple therapy
Dietary recommendations	Avoid spicy, acidic, and fatty foods, limit alcohol and caffeine	Avoid spicy, acidic, and fatty foods, limit alcohol and caffeine
Follow-up care	Regular follow-up endoscopies for severe cases, monitoring for complications	Regular follow-up endoscopies for severe cases, monitoring for complications
Cost of treatment	Varies widely, often high in private healthcare systems	Generally lower in the public healthcare system, but out-of-pocket costs can be significant in the private sector
Public Health Initiatives	Awareness campaigns on H. pylori and proper medication use	Similar campaigns, with a specific focus on local dietary habits and traditional medicine use

Conclusion

To conclude, there is no difference between the international and Malaysian approaches to treating patients with chronic gastritis from the point of view of evidence-based medicine. It also revealed that both approaches prioritize using scientific evidence to guide clinical decision-making. Malaysia's approach shows a commitment to adapting international guidelines to the local situation and considering resource restrictions, even if international guidelines offer a wider range of treatment options and contain a greater evidence base. Both strategies stress the value of collaborative decision-making between patients and healthcare professionals and customized patient care. All things considered, the comparison emphasizes how important evidence-based medicine is for directing the treatment of chronic gastritis and emphasizes the necessity of further research and cooperation to maximize patient results.

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