Microbiota Medicine Research

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Principles and Practice Guidelines of Microbiota Medicine: Statements From the CHINAGUT Conference

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ABSTRACT

As an emerging branch of clinical medicine, microbiota medicine has attracted worldwide attention from clinicians, medical educators, patient communities, and industry. However, this developing field still lacks consensus on its fundamental principles as well as guidelines for clinical and educational practice. An expert panel was convened by the journal *Microbiota Medicine Research* at the 2025 CHINAGUT Conference to develop the principles and practice guidelines of microbiota medicine using the Delphi method. This document provides a new framework for clinicians, educational institutions, and healthcare administrators. The expert panel developed 15 key statements, encompassing definitions of microbiota medicine and dysbiosis-related diseases, graded value evaluation of microbiome testing technologies, pathways for multidisciplinary discussions on complex dysbiosis-related diseases, and educational frameworks for physicians in microbiota medicine. The panel further recommends incorporating microbiota medicine into undergraduate and postgraduate medical education and emphasizes the application of artificial intelligence in supporting microbiota medicine. This guideline defines core competencies required for physicians specializing in this discipline. Collectively, this guideline aims to define the significant role of microbiota medicine in clinical practice and medical education, thereby advancing its sustainable development.

1 | Introduction

The human microbiota and its host form a symbiotic ecosystem that profoundly influences health and disease throughout lifespan [1, 2]. The widespread use of antibiotics, popularization of Western dietary patterns, dramatic lifestyle transitions, and ongoing industrialization are persistently disrupting human microbiota balance, leading to substantial shifts in disease spectrum [3, 4]. Growing evidence demonstrates that diseases ranging from infections and inflammatory disorders to malnutrition and cancer are closely associated with microbiota dysbiosis, unveiling a new dimension in the recognition of medicine and health [5].

Microbiota medicine (otherwise called microbiome medicine as synonyms) encompasses multidimensional research and multifaceted clinical practice due to its inherently interdisciplinary nature [6]. This includes microbiome-based diagnostic technologies [7], spore-based therapies [8], washed microbiota transplantation [9], phage therapy [10, 11], oncolytic bacterial therapy

Key Points

- The present guidelines for microbiota medicine provide a framework for its application in clinical practice, education, and healthcare management.
- Dysbiosis-related diseases should be identified based on clinical association, mechanistic evidence, and therapeutic response.
- Microbiome sequencing reports should be clearly distinguished across research-grade, clinical-grade, and consumer-grade applications.
- The panel recommends incorporating microbiota medicine into undergraduate and postgraduate medical education.
- High-quality practice in microbiota medicine requires multidisciplinary collaboration and necessary AI-assisted approaches.
- The present guidelines define core competencies required for physicians in microbiota medicine.

[12], oncolytic virotherapy [13], microbiota-guided interventional procedures [14, 15], human microbial diversity conservation [16], pharmacomicrobiomics [17], and investigations into host–microbiota interactions, healthcare policy, and medical education [6].

Given its rapid advancement and uneven resource distribution, microbiota medicine urgently requires standardized clinical and educational practice guidelines. The CHINAGUT Conference is a premier academic conference with global leadership [18]. It serves as a platform for establishing authoritative position statements, expert consensus, and clinical practice guidelines. For the 2025 CHINAGUT Conference, an expert panel organized by the journal *Microbiota Medicine Research* was convened to develop the principles and practice guidelines of microbiota medicine. These guidelines aim to provide clinicians, educators, and healthcare administrators with a comprehensive framework to advance education, clinical practice, research, and public popularization of microbiota medicine. This document seeks to establish microbiota medicine as part of general medical education, guide clinicians in transcending disciplinary, institutional, and geographical boundaries, and support the efficient organization of complex dysbiosis-related disease discussions to meet clinical needs. Moreover, the expert panel delineates the essential knowledge foundation, skill base, and competence requirements for microbiota medicine practitioners, providing a reference for professional training and curriculum design. These guidelines are primarily intended for clinicians, medical educators, clinical researchers, and healthcare institution administrators engaged in the development and implementation of microbiota medicine practice.

2 | Methods

The expert panel developed this guideline using the Delphi method. The panel consisted of distinguished clinicians who have made significant contributions to microbiota medicine. Experts were invited based on their leadership roles in clinical practice and scientific research in diagnosis, therapy, or guideline development of this field.

The preliminary draft was prepared by Zhang F. and the scientific secretariat team (Pi Z., Wang W., Wang Z., Yu Y., and Zhang Z.). The draft was distributed to all panel members in advance of the 2025 CHINAGUT Conference. During the conference held in June 2025, over 80% of the expert panel members participated in the open discussion to review, revise, and refine the proposed statements and accompanying comments. Following the discussion, all 48 experts were requested to participate in an online anonymous voting and revision process on each statement and comment. Each statement was independently rated using a five-point Likert scale: (1) strongly agree; (2) agree with reservation; (3) undecided; (4) disagree; and (5) strongly disagree. A statement was considered to have reached consensus if the combined proportion of "strongly agree" and "agree with reservation" responses exceeded 80%. Suggestions provided during the voting process were reviewed by the scientific secretariat and incorporated into the revised text. As consensus was achieved for all statements in one round of voting, no additional Delphi rounds were conducted.

3 | Results

The expert panel is comprised of 48 clinicians from China, Singapore, Japan, India, and Italy. After the face-to-face meeting to discuss the draft, one round of voting and editing for the statements and comments was performed to reach consensus on all statements. The expert panel completed the online anonymous voting and revisions. The finalized guideline includes 15 consensus statements (Figure 1).

Statement 1. *Microbiota medicine is an emerging clinical discipline that investigates microbiota–host interactions to develop evidence-based strategies for disease prevention, diagnosis, and treatment, while advancing clinical practice and medical education.*

Comment: The human microbiota constitutes an integral component of the human "superorganism" [19] and is involved throughout the entire human lifespan [2]. The increasing application of microbiota-related technologies has continuously advanced medical science and catalyzed the evolution of microbiota medicine into a new clinical medical discipline [6]. Although medical microecology (or medical microbiology) and microbiota medicine are closely related, they differ fundamentally in scope and purpose. Medical microecology belongs to the category of basic medicine, its core task is rational medicine; microbiota medicine belongs to the category of clinical medicine and its core task is effective diagnosis and treatment. Microbiota medicine relies on modern scientific methodologies to conduct systematic investigations into etiology, pathogenesis, clinical manifestations, diagnosis and differential diagnosis, treatment, and prevention. Its cross-disciplinary nature transcends traditional boundaries among specialties, demanding broad perspectives and integrated skillsets to manage complex diseases. Concurrently, innovative curriculum design and teaching methods are required for education in microbiota medicine, thereby driving the evolution of modern medicine.

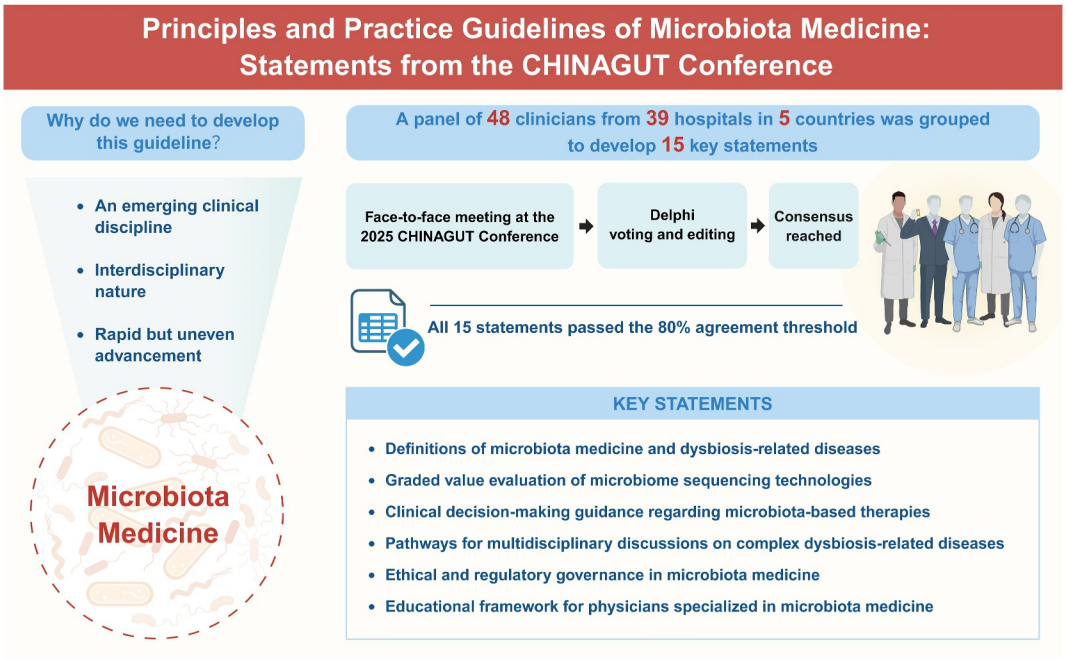

FIGURE 1 | Overview of 15 key statements on the principles and practice guidelines of microbiota medicine from the 2025 CHINAGUT Conference.

Statement 2. *Microbiota dysbiosis-related diseases comprise a group of disorders whose onset and/or progression is associated with dysbiosis and that may be ameliorated through microbiota reconstruction.*

Comment: The human microbiota consists of dynamically changing microbial communities distributed throughout the body. Long-term host–microbiota coevolution has established inseparable and reciprocal interactions. Normally, ecological niches in the gut, skin, respiratory tract, and vagina maintain a complex yet dynamic equilibrium [20], which is essential for sustaining health. Disruption of the microbial balance in any of these sites can induce infections, inflammation, immune dysfunction, and other related disorders, thereby influencing clinical manifestations and prognosis [21]. Clinical applications of fecal microbiota transplantation (FMT) have been reported in over 85 diseases across the immune, hematologic, neurologic, respiratory, urinary, and reproductive systems [22], which underscores the extensive and profound role of microbiota dysbiosis in disease pathogenesis and progression. The concept of microbiota dysbiosis-related diseases encompasses a broad spectrum of disorders linked by dysbiosis as a shared pathogenic mechanism and core characteristic. In clinical practice, microbiota dysbiosis-related diseases should be defined through an evidence-based conceptual framework. A disease may be considered dysbiosis-related when one or more of the following criteria are met: (1) validated associations between microbiota alterations and disease phenotypes; (2) supportive mechanistic evidence from experimental research; and (3) reproducible clinical response following microbiota-based interventions. Microbiota medicine breaks traditional subspecialty boundaries within clinical medicine by integrating diverse organs, microbial ecosystems, and diseases into a unified framework, thereby establishing itself as a new and comprehensive clinical discipline.

Statement 3. *The pathophysiological mechanisms underlying host–microbiota interactions often involve abnormal processes such as inflammation, immune dysregulation, and metabolic disturbance.*

Comment: Host–microbiota interactions are extensively involved in pathophysiological processes such as infection, toxin activity, chronic inflammation, abnormal immunity, metabolic disorders, and tumorigenesis [23]. Based on the temporal characteristics and intensity of inflammatory responses, microbiota dysbiosis-related diseases can generally be categorized into three types: acute inflammation, chronic inflammation, and chronic low-grade inflammation. Acute inflammation represents the host's rapid defense response to microbial invasion or tissue injury. Persistent dysbiosis may result in sustained abnormal immune activation and chronic inflammation, which underlies the pathogenesis of multiple chronic diseases such as inflammatory bowel disease (IBD), systemic lupus erythematosus (SLE), and rheumatoid arthritis (RA). Chronic low-grade inflammation, as a state of long-term presence of low-level inflammation, serves as part of the pathological basis of obesity, type 2 diabetes mellitus, atherosclerosis, and neuroinflammatory disorders [24]. Several classical lines of evidence illustrate the causal relevance between microbiota dysbiosis and disease progression. For instance, current guidelines recognize FMT as an effective therapy for *Clostridioides difficile* infection (CDI) [25]. The obese phenotype in humans can be transferred to germ-free mice via FMT [26]. FMT using stool from colorectal cancer patients can induce tumorigenesis in mice [27].

Statement 4. *The clinical suspicion of gut microbiota dysbiosis should be primarily based on patient history, medication use, symptoms and signs, and standard clinical investigations. At present, microbiome sequencing reports should not be used as the basis for clinical diagnosis.*

Comment: In the current stage, the diagnostic value of gut microbiome sequencing remains limited. Although high-throughput sequencing methods (such as 16S rRNA sequencing and metagenomic sequencing) enable comprehensive analysis of microbiome, high costs, lengthy procedures, and the lack of clinical consensus on interpreting results hinder their clinical application [7]. The expert panel recommends that the diagnosis of microbiota dysbiosis-related diseases should primarily rely on integrated clinical assessment, including clinical history, symptoms, signs, and conventional auxiliary examinations. For example, when a patient develops or experiences worsening diarrhea during antibiotic therapy, antibiotic-associated diarrhea should be considered. Diagnosing microbiota dysbiosis-related diseases requires excluding other diseases that could present with similar clinical manifestations. Although sequencing analyses of bacterial, viral, and fungal components of the fecal microbiota have significant research value, they currently lack clinical decision-making value. Notably, this statement reflects current evidence and does not preclude future clinical applications. With advances in multi-omic data integration and longitudinal validation across large-scale clinical studies, microbiome sequencing may exert a more significant role in diagnosis and treatment of microbiota dysbiosis-related diseases in the future.

Statement 5. *The application of microbiome sequencing should be defined across research, clinical, and consumer domains. Each of these contexts should be guided by clear standards of evidence and recommendations for appropriate use.*

Comment: Increasing attention has been directed towards the potential of gut microbiome as a diagnostic tool and a therapeutic target. However, the application value of microbiome testing must be clearly defined and evidence-based [7]. The application of microbiome testing can be categorized into research-grade (genomic sequencing for scientific research), clinical-grade (specific pathogen detection for clinical decision-making), and consumer-grade (genomic sequencing for consumer purposes). The researchers, clinicians, and test providers should clearly distinguish the respective levels of applicability and supporting evidence. The development of new testing methods, analytical algorithms, and evidence-based medical findings will change the application level of specific techniques over time.

Concretely speaking, research-grade microbiome testing is primarily intended for scientific investigation. It typically involves high-resolution sequencing aimed at identifying microbial mechanisms or biomarkers, rather than clinical decision-making. Clinical-grade microbiome testing refers to assays that have validated associations with clinical outcomes. Such tests are usually limited to specific pathogens, microbial functions, or genetic markers with established diagnostic or prognostic value. The latest international consensus on clinical microbiome testing [7] emphasizes that the applicability and interpretation of microbiome sequencing and analysis require caution. Notably, specific microbial tests for particular diseases do have established diagnostic value. For example, detection of *C. difficile* toxins or toxin-producing strains in stool is critical for diagnosing CDI [28]. Identification of the *Escherichia coli scrK* gene deletion in ulcerative colitis patients indicates reduced fructose metabolism capacity and more severe intestinal inflammation, which guides dietary avoidance of high-fructose intake [29]. Detection of gene markers for *Fusobacterium nucleatum*, *Parvimonas micra*, and *Lachnoclostridium* in colorectal adenoma and cancer patients enables non-invasive screening for colorectal neoplasia [30, 31]. Patients are advised not to seek microbiome testing without clinical recommendation [7]. On the contrary, consumer-grade microbiome testing is generally offered directly to the public without clinician involvement. These tests often provide descriptive associations between microbial composition and health risk, yet lacking validated outcome-based evidence. Hence, these findings should not be used to guide clinical diagnosis or therapeutic decisions, as uncritical overuse may lead to unnecessary anxiety, inappropriate interventions, or waste of healthcare resources. Public warnings have been raised that direct-to-consumer microbiome sequencing services may result in waste of personal and societal resources [32, 33].

Statement 6. *Microbiota-based interventions, such as FMT and selected prebiotic or probiotic approaches, offer potential therapeutic options for dysbiosis-related diseases.*

Comment: Gut microbiota dysbiosis is associated with a wide range of diseases. Accordingly, microbiota-based therapies such as FMT, prebiotics, and probiotics have become important therapeutic options. Recent studies suggest that gut microbiota can be categorized into foundation guild (e.g., commensal microbes that maintain homeostasis) and pathobiont guild (e.g., proinflammatory species that drive disease) based on functional characteristics [34]. Disruption of the balance between these two groups contributes to the development of metabolic disorders, autoimmune diseases, neuropsychiatric disorders, and even malignant tumors [34]. An increasing body of research on gut-X axis demonstrates that interventions targeting the gut microbiota offer novel therapeutic avenues for extraintestinal diseases [35]. Moreover, appropriate dietary management strategies can enhance and sustain the clinical efficacy of FMT [36].

Statement 7. *Clinical decisions regarding microbiota-based therapies should be guided by the patient's condition and adherence to standardized evaluation and reporting frameworks such as the PRIM 2024 recommendations.*

Comment: Currently, there is a lack of universally accepted diagnostic standard for dysbiosis [7]. However, a reasonable clinical diagnosis of dysbiosis can be established by integrating the patient's medical history, medication record, and disease manifestations. For recurrent or refractory CDI, FMT achieves a clinical cure rate of up to 90% [37]. Furthermore, studies have shown that vancomycin treatment may inadvertently enhance *C. difficile* virulence by promoting symbiotic biofilm formation between *C. difficile* and *Bacteroides thetaiotaomicron*, leading to upregulated expression levels of the virulence genes *tcdA* and *tcdB* [38]. Therefore, to avoid ineffective repeated antibiotic treatments, clinicians should consider FMT earlier in the therapeutic pathway. For non-guideline-recommended indications (e.g., autism spectrum disorder and metabolic diseases), microbiota-based therapies should be conducted under legal and ethical conditions (e.g., government-authorized hospital programs, registered clinical trials, or compassionate-use protocols) and strictly adhere to informed consent principles [18]. The expert panel recommends adopting PRIM 2024 [39] as the standardized framework for evaluating and reporting microbiota-based therapies to enhance transparency, safety, and efficacy. Health authorities should include FMT and other cutting-edge microbiota-based therapies within the scope of stringent medical technology oversight [18]. Moreover, these newly established expert

recommendations will further accelerate the development of live biotherapeutic products [40].

Statement 8. *High-quality clinical care in microbiota medicine requires multidisciplinary expertise, robust clinical infrastructure, and advanced diagnostic systems.*
Comment: Clinical practice in microbiota medicine should be centered on the thinking pattern of holistic integrative medicine, aiming at achieving personalized interventions through multidimensional resource coordination. Although the increasing specialization of modern medicine has improved the management of localized or organ-specific problems, it has also fragmented understanding of complex host–microbiota interactions (e.g., antibiotic resistance resulting from overuse of antibiotics [41]). The core concept of holistic integrative medicine lies in synthesizing knowledge and resources across disciplines to address the fundamental challenges in medical practice (the nature, mechanisms, and interventions of disease) [42]. For organizers of discussions on complex cases in microbiota medicine, the expert panel emphasizes that the foremost task is to integrate specialized personnel and medical resources (technologies, pharmaceuticals, devices, experts, clinical trials, social assistance, etc.), and leverage artificial intelligence (AI) tools to facilitate efficiency. AI–driven decision support represents an emerging tool with significant potential to advance diagnosis and personalize care.

Statement 9. *Establishing integrative teams that span disciplines, institutions, and geographic regions can substantially improve the management of complex microbiota dysbiosis-related diseases by overcoming the limitations of single-specialty expertise.*
Comment: In the management of complex, refractory, or cross-disciplinary microbiota dysbiosis-related diseases, it is crucial to establish an integrated diagnostic and therapeutic team that transcends traditional barriers between disciplines, institutions, and geographic regions. Research has demonstrated that multidisciplinary models outperform gastroenterologist-only care in improving symptoms, alleviating specific functional impairments, adjusting psychological states, enhancing quality of life, and controlling nursing costs in the context of functional gastrointestinal disorders [43]. An effective integrative team of microbiota medicine should encompass diverse roles including clinicians, researchers, pharmacists, microbiological laboratory specialists, and nursing specialists. High-demand departments (e.g., gastroenterology, endocrinology, critical care medicine, psychiatry) are encouraged to establish expert databases to ensure efficient collaboration. The rapid advancement of large language models (LLMs) and other AI-based technologies is transforming medical practice by providing scalable tools [44, 45]. AI-generated diagnostic and therapeutic recommendations may help reduce misdiagnosis and inappropriate management in patients with gastrointestinal symptoms [46] and predict the efficacy of washed microbiota transplantation for ulcerative colitis [47]. Nevertheless, although AI systems can significantly enhance clinical decision support, the attending physicians must be responsible for discerning logical flaws of AI-generated outputs [44].

Statement 10. *In the multidisciplinary management of microbiota dysbiosis-related diseases, the attending physician acts as the primary coordinator, integrating clinical information, collecting medical history, and facilitating case discussions. Shared decision-making with the patient should be undertaken after multidisciplinary consultation and consensus on the management plan.*
Comment: The essence of multidisciplinary discussion lies in a patient-centered decision-making process [48]. The attending physician team should systematically synthesize and review the case documentation, which should include at least the following elements: a chronological medical history outlining disease onset, key events, and disease trajectory, and a list of unresolved clinical issues. To ensure that participating experts can engage meaningfully in the discussion, all relevant case materials should be shared in advance. After the discussion concludes, the lead physician should synthesize expert opinions, formulate a recommended diagnostic and treatment plan, and engage the patient and their family in shared decision-making.

Statement 11. *Multidisciplinary discussions in microbiota medicine should safeguard patient privacy and prioritize patient welfare, guided by the principles of beneficence and non-maleficence.*
Comment: The organizers of multidisciplinary discussions should clearly articulate the guiding principles concerning privacy protection, mutual respect, and discussion efficiency before the meeting begins. Protecting patient privacy is a fundamental principle of medical ethics, especially when personal medical data is shared across institutions or discussed in group settings. Identifiable information must be concealed, especially in online discussions and meeting recordings where privacy breaches are more likely to occur [49]. Organizers should cultivate a culture of mutual respect by emphasizing courtesy, freedom, and openness, encouraging team members to actively share perspectives to promote knowledge exchange and intellectual collision. Experts should be reminded to avoid excessively lengthy statements, allowing sufficient time for focused deliberation. The attending physician should be the final speaker in the discussion to prevent potential bias from influencing the opinions of other experts and junior physicians, thereby preserving the objectivity and comprehensiveness of the discussion.

Statement 12. *When local medical resources for microbiota medicine are limited, digital health or telemedicine platforms should be employed to establish multidisciplinary collaborative networks. When clinically indicated, coordinated emergency support or cross-institutional referral pathways should be activated.*
Comment: The expert panel recommends that if the attending physician determines that the available resources within their medical institution are insufficient to support the required diagnosis or treatment, they should proactively employ communication technologies to establish collaborative medical networks. This approach embodies the core philosophy of holistic integrative medicine distinct from traditional multidisciplinary discussions, which emphasizes resource coordination beyond the boundaries of a single institution. Advanced technological tools (e.g., AI-assisted consultation networks and telemedicine systems) can overcome language and geographical barriers to improve efficiency. When patients urgently require specialized treatments such as FMT that cannot be performed locally, intelligent communication systems should be used to immediately initiate requests for emergency rescue or cross-

institutional referrals. Additionally, non-profit stool banks can provide life-saving treatments for patients with refractory intestinal infections in remote locations [50, 51].

Statement 13. *Clinical decision-making in microbiota medicine must prioritize patient benefit, and refrain from commercially driven practices that lack evidence-based efficacy, undermine clinical priorities, or violate ethical or regulatory standards.*

Comment: The clinical translation of microbiota-medicine-related technologies requires vigilance against risks of misuse [7]. Healthcare institutions and regulatory authorities should include cutting-edge microbiota-medicine-related technologies and the catalog of regulated medical technologies, while prohibiting unqualified entities from directly or indirectly providing related services. For instance, FMT constitutes a medical procedure whose clinical application must be conducted within certified healthcare facilities [18, 52]. In contrast, certain commercial entities have promoted microbiome testing and intervention services directly to the public, engaging in illegal medical activities and false advertising [53].

Statement 14. *Microbiota medicine should be incorporated into undergraduate and postgraduate medical education to foster interdisciplinary competence and prepare future physicians for microbiome-based clinical practice.*

Comment: Since the concept of microbiota medicine as an emerging discipline was first proposed in 2023, it has been progressively transforming traditional medical practice models [6]. By 2025, the international scientific community has called for more initiatives to integrate microbiome-based approaches into diagnostic and therapeutic strategies, thereby shaping a new interdisciplinary clinical role known as the "microbiome clinician" [54]. Integrating microbiota medicine into the undergraduate and postgraduate medical education is not only an expansion of medical knowledge, but also a response to the need for comprehensive patient health management. Physicians should actively embrace interdisciplinary learning, engage in continuous professional development, and participate in academic exchange, so as to narrow knowledge gaps and enhance clinical competence. The expert panel recommends that medical schools concurrently establish dedicated curricula and training programs in microbiota medicine to provide students with academic interest, research capabilities, and practical skills in this field. Such educational efforts will cultivate high-level professionals equipped to advance the clinical and scientific development of microbiota medicine.

Statement 15. *Physicians in microbiota medicine should demonstrate core competencies in theoretical knowledge, technical skills, and communication competence, with the capacity to coordinate multidisciplinary care using integrative approaches.*

Comment: The framework comprises nine key competences spanning theoretical foundations, technical skills, and expression competence (Figure 2). To achieve effective integrative decision-making, physicians must be proficient in the application of literature evidence and AI tools for decision support. The essence of holistic medical perspective emphasizes comprehensive consideration of a patient's biological, psychological, and social dimensions. Expression competence should be reflected through both communication and action, as evaluated by patient or guardian feedback. Physicians are expected to demonstrate empathy, compassion, and responsibility, while ensuring that patients and their families fully understand the medical information provided. Moreover, physicians should remain aware of their own limitations and be able to organize available resources efficiently to meet clinical needs. Physicians responsible for leading multidisciplinary discussions in microbiota medicine must particularly embody above mentioned competencies. Hospital and team administrators may assess the effectiveness of multidisciplinary discussion through patient satisfaction surveys, expert feedback, and treatment outcome

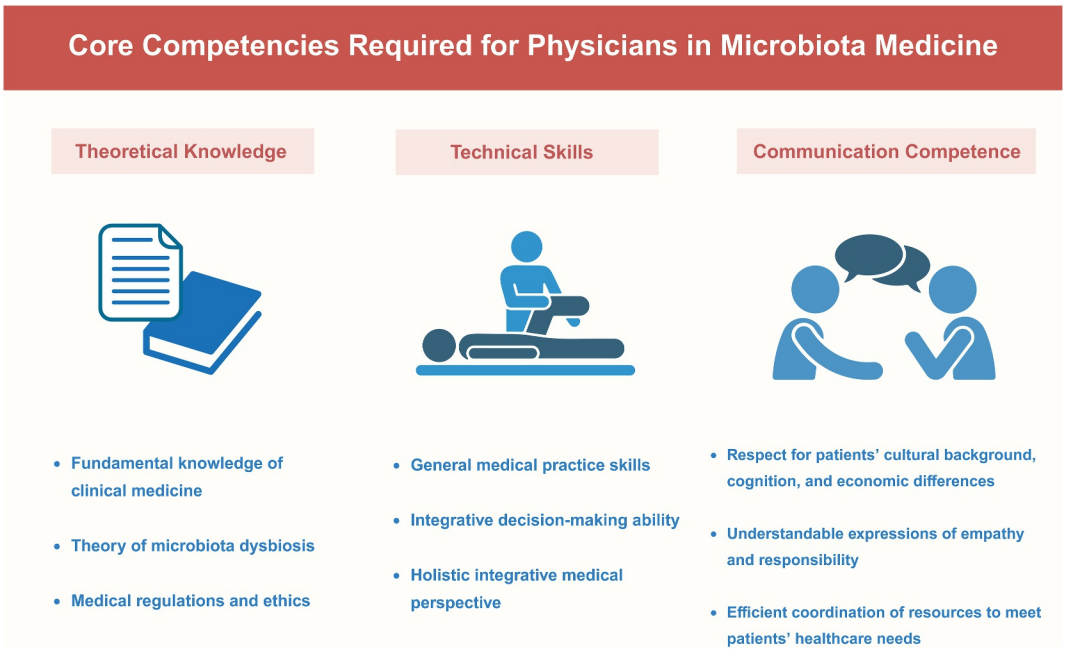

FIGURE 2 | Clinical competence framework for physicians in microbiota medicine.

tracking. Educational resources, such as textbooks, guidelines, and journals, should emphasize cultivating these nine core competencies through thematic and interdisciplinary case discussions.

4 | Conclusions

This guideline provides a clear set of principles and practical recommendations for the clinical practice of microbiota medicine. It emphasizes interdisciplinary collaboration, optimized allocation of medical resources, and a patient-centered integrative model of medical practice. At the same time, this guideline outlines essential competencies that physicians in microbiota medicine should possess, thereby defining the professional development goals for educational institutions, medical organizations, and individual practitioners. In the future, this guideline will be continuously updated based on clinical feedback, medical technological advances, and deepening application of AI. Its implementation will promote the translation of microbiota medicine from theory to clinical practice, facilitate efficient integration of healthcare resources, enhance comprehensive diagnostic and therapeutic quality, and ultimately drive the sustainable development of microbiota medicine.

Author Contributions

Faming Zhang: conceptualization, funding acquisition, visualization, writing – original draft, writing – review and editing, supervision. **Zheshun Pi:** writing – original draft, writing – review and editing, visualization. **Sunny Hei Wong:** writing – original draft, writing – review and editing, supervision. **Vineet Ahuja:** writing – review and editing. **Serena Porcari:** writing – review and editing. **Dai Ishikawa:** writing – review and editing. **Hailong Cao:** writing – review and editing. **Linlin Chen:** writing – review and editing. **Ning Chen:** writing – review and editing. **Xiong Chen:** writing – review and editing. **Bota Cui:** writing – review and editing. **Xiao Ding:** writing – review and editing. **Xingxiang He:** writing – review and editing. **Jia Hu:** writing – review and editing. **Jiang Jin:** writing – review and editing. **Ji Li:** writing – review and editing. **Weiwei Liao:** writing – review and editing. **Jingmei Liu:** writing – review and editing. **Ling Liu:** writing – review and editing. **Yanyan Liu:** writing – review and editing. **Yaping Liu:** writing – review and editing. **Yu Liu:** writing – review and editing. **Chen Lu:** writing – review and editing. **Gaochen Lu:** writing – review and editing. **Muhan Lv:** writing – review and editing. **Xiangjun Meng:** writing – review and editing. **Yongzhan Nie:** writing – review and editing. **Qian Ren:** writing – review and editing. **Lixuan Sang:** writing – review and editing. **Xin Sun:** writing – review and editing. **Yang Sun:** writing – review and editing. **Hongliang Tian:** writing – review and editing. **Baohong Wang:** writing – review and editing, funding acquisition. **Honggang Wang:** writing – review and editing. **Liangjing Wang:** writing – review and editing. **Xin Wang:** writing – review and editing. **Weihong Wang:** writing – original draft, writing – review and editing. **Zheyu Wang:** writing – original draft, writing – review and editing. **Yanling Wei:** writing – review and editing. **Quan Wen:** writing – review and editing. **Lihao Wu:** writing – review and editing. **Xia Wu:** writing – review and editing. **Lijing Xiong:** writing – review and editing. **Guoliang Ye:** writing – review and editing. **Bo Yi:** writing – review and editing. **You Yu:** writing – original draft, writing – review and editing. **Yue Zeng:** writing – review and editing. **Huihong Zhai:** writing – review and editing. **Ting Zhang:** writing – review and editing. **Zulun Zhang:** writing – original draft, writing – review and editing. **Li Zhou:** writing – review and editing. **Li Zhu:** writing – review and editing. **Kaichun Wu:** writing – review and editing.

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Ethics Statement

The authors have nothing to report.

Conflicts of Interest

Faming Zhang conceived the concept of GenFMTer and trans-endoscopic enteral tubing and the devices (FMT Medical) related to them. Faming Zhang and Sunny Hei Wong are the Editors-in-Chief of *Microbiota Medicine Research*. Vineet Ahuja, Serena Porcari, Dai Ishikawa, and Xingxiang He are the Associate Editors of *Microbiota Medicine Research*. Ning Chen, Jia Hu, Ji Li, Ling Liu, Yongzhan Nie, Xin Sun, Baohong Wang, and Bo Yi are the Editorial Board Members of *Microbiota Medicine Research*. To minimize bias, they were excluded from all editorial decision-making related to the acceptance of this article for publication. The other authors declare no conflicts of interest.

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