Metabolic Dysfunction-Associated Steatotic Liver Disease in Challenging Care Settings: Clinical Implications from the MENA Region

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INTRODUCTION

Recently, the global response to hepatitis C virus infection has shown that major liver disease challenges can be reshaped through coordinated clinical, public health, and policy action.[1]

Yet, as the burden of viral hepatitis declines in many settings, a broader and more complex challenge has moved to the foreground. Metabolic dysfunction-associated steatotic liver disease (MASLD) now affects approximately one in three adults worldwide and has become one of the defining liver diseases of modern hepatology.[2] The clinical and system-level challenges of MASLD are not confined to any single region. They are increasingly shared across health systems with different resources, infrastructures, and models of care.[3] For this reason, the experience of the Middle East and North Africa (MENA) region is not only regionally relevant, but also instructive for clinicians and policymakers in Europe and beyond.

The MENA region provides a relevant example of how MASLD care is being shaped under conditions of high disease burden, variable resources, and uneven health system infrastructure. Rather than presenting these challenges as region-specific, this article uses the MENA experience as a practical lens through which to examine implementation problems that are increasingly familiar to European clinicians. The authors focus on four key pillars: awareness and education gaps, diagnostic access and risk stratification, pharmacotherapy affordability and access, and care coordination across fragmented health systems (Figure 1).

Figure 1: Four implementation pillars for MASLD management in challenging care settings: MENA and European perspectives.

MENA REALITY	PILLAR	EUROPEAN MIRROR
Knowledge deficits documented among primary care providers in Egypt, Saudi Arabia, and Türkiye; MASLD frequently diagnosed incidentally at advanced fibrosis stage; no unified Arabic medical terminology across the region.	01 Awareness and education gaps	Identical gaps in primary care physician preparedness documented across European health systems; guidelines exist but implementation at point of first contact remains consistently poor.
Advanced diagnostic tools (VCTE, MRE, MRI-PDFF) confined to tertiary centers; clinicians rely on abdominal ultrasound and FIB-4 as daily operational necessity where fibroscan is unavailable.	02 Diagnostic access and risk stratification	NIT-first pathways (FIB-4 as first-line tool) becoming the standard approach; liver biopsy increasingly reserved for selected cases; same practical triage challenge at population scale.
Resmetirom (~47,400 USD/year) inaccessible for most MENA health systems; GLP-1 receptor agonists restricted to T2D indications rather than liver-directed therapy; cost a primary barrier.	03 Pharmacotherapy affordability and access	Reimbursement decisions vary substantially across European national health systems; a drug can be licensed, guideline-endorsed, and still unreachable for patients.
Patients with obesity, T2D, and MASLD managed separately across specialty clinics; no unified multidisciplinary care plan; MASLD not integrated as hepatic manifestation of metabolic disease.	04 Care coordination and system fragmentation	Structurally identical fragmentation documented in European primary care; MDT models recommended but rarely implemented; primary-led pathways remain aspirational in most settings.

Four implementation pillars for MASLD management in challenging care settings, comparing clinical realities in the MENA region with parallel challenges in European health systems. Each pillar represents a domain where resource-variable experience from MENA offers directly transferable lessons for European primary care.

FIB-4: fibrosis-4 index; GLP-1: glucagon-like peptide-1; MASLD: metabolic dysfunction-associated steatotic liver disease; MDT: multidisciplinary team; MENA: Middle East and North Africa; MRE: magnetic resonance elastography; MRI-PDFF: MRI-derived proton density fat fraction; NIT: non-invasive test; T2D: type 2 diabetes; VCTE: vibration-controlled transient elastography.

THE MENA BURDEN

MASLD prevalence in the MENA region is among the highest reported globally. Prevalence rates vary between studies according to the diagnostic methods, study population, and disease definition, but consistently range from approximately 36–46%, with the highest rate recorded in Egypt (45%), Kuwait (45.4%), and Qatar (44.4%), countries with highest burden of obesity and Type 2 diabetes.[4]

The clinical picture in MENA is shaped not only by the prevalence figures but also by a characteristic metabolic phenotype. Patients presented with hepatic fibrosis at earlier stages and progression from MASLD to metabolic dysfunction-associated steatohepatitis (MASH) with advanced fibrosis occurred at a younger age.[4] This acceleration is attributed to dense clustering of metabolic risk factors, such as obesity, insulin resistance, dyslipidaemia, and Type 2 diabetes, which are highly prevalent between patients. Rapid dietary transitions and lifestyle urbanisation over the past two to three decades have participated in this.

The knowledge gap represents an additional contributing factor. A survey of 584 physicians across Saudi Arabia, Egypt, and Türkiye found a significant deficit in MASLD identification, diagnosis, and management, which was most pronounced among primary care physicians, and the guidelines adherence rate was only

38–51%.[5] Clinical infrastructure for identifying, staging, and managing MASLD remains uneven across the MENA region. This variability reflects what the authors define here as a challenging care setting: a clinical environment in which MASLD care is limited by structural barriers rather than by disease biology alone. These barriers may include fragmented referral pathways, limited preparedness of primary care to recognise and risk stratify MASLD, restricted access to advanced diagnostic tools outside tertiary centres, delayed staging of liver fibrosis, inequitable access to emerging pharmacotherapies, and insufficient multidisciplinary coordination.[6]

Importantly, this concept is not restricted to the MENA region. Similar barriers may arise in any health system when metabolic disease burden increases faster than the capacity of primary care, hepatology services, diagnostic infrastructure, and reimbursement pathways. For European clinicians, the relevance is therefore practical rather than purely comparative. The MENA experience provides a lens through which to examine four shared implementation challenges: awareness and education gaps, diagnostic access and risk stratification, pharmacotherapy affordability and access, and care coordination across fragmented health systems.

PILLAR 1: AWARENESS AND EDUCATION GAPS

Awareness gaps in MASLD present at both healthcare providers and public levels, and both matter clinically. At the physicians level, the gap begins in medical education curricula, which allocate minimal time to MASLD, leaving primary care providers (the frontline of disease detection) inadequately prepared to identify, stage, or manage the disease systematically.[7] A regional survey confirmed knowledge deficit among health care professionals in Egypt, Saudi Arabia, and Türkiye,[5] and in most cases, MASLD was diagnosed accidentally during imaging or blood tests orders for other reasons, frequently at advanced fibrosis stage.[7] At the public level, knowledge and understanding of disease prevalence, risk of progression, and complications remain a major misconception. At both levels, unified Arabic terminology across the MENA region has been a longlisting challenge, and in response, a consensus on Arabic medical terminology for steatotic liver disease was established.[8]

Europe is not exempt; identical gaps in primary care physician preparedness have been reported across the European healthcare system. Guidelines exist, but implementation at first point of contact remains behind.

PILLAR 2: DIAGNOSTIC ACCESS AND RISK STRATIFICATION

Advanced diagnostic tools, such as vibration-controlled transient elastography, magnetic resonance elastography, and MRI derived proton density fat fraction, remain largely confined to tertiary centres across MENA. In real clinical settings, most clinicians depend on abdominal ultrasound as a screening method in patients with documented history of metabolic diseases (obesity, Type 2 diabetes, hyperlipidaemia) and with palpable hepatomegaly, despite ultrasound's limited sensitivity for mild steatosis and early fibrosis.[7] New guidelines, and global and local consensus documents, have positioned the Fibrosis-4 Index (FIB-4) score as mandatory first-line risk stratification tool, with a score below 1.3 enabling management at the primary care setting, while higher scores should be referred to a hepatologist.[9] This practice represents a daily operational necessity when fibroscan access is unavailable. European clinicians face the same practical dilemma, and the use of non-invasive tests becomes the foundational first step for MASLD evaluation across European primary care.

PILLAR 3: PHARMACOTHERAPY AFFORDABILITY AND ACCESS

The approval of the first liver directed pharmacotherapies for MASH has changed the therapeutic landscape, but it has also introduced a new implementation challenge.

Resmetirom received accelerated FDA approval in March 2024 for adults with noncirrhotic MASH and moderate-to-advanced fibrosis, consistent with fibrosis stages F2–F3, to be used alongside diet and exercise.[10] Semaglutide 2.4 mg was subsequently granted accelerated FDA approval in August 2025 for adults with noncirrhotic MASH with moderate-to-advanced fibrosis, becoming the first glucagon-like peptide-1 receptor agonist approved for this indication.[11]

These approvals mark an important transition from lifestyle-based management alone to disease-targeted therapy.[6,9] However, access is likely to be highly uneven. Even when liver-directed therapies are approved, their availability in routine practice may be constrained by cost, reimbursement policies, health system capacity, and the absence of clearly defined treatment pathways. This is particularly relevant for many MENA health systems and for other reimbursement-constrained settings elsewhere.[12] In addition, glucagon-like peptide-1 receptor agonists remain primarily accessed through diabetes and obesity indications in many countries, rather than through liver-directed treatment pathways. Without mechanisms such as differential pricing, reimbursement reform, local access agreements, and integration of MASLD pharmacotherapy into broader noncommunicable disease programmes, approved therapies may remain available only to a small proportion of eligible patients.[7,12] This concern is not unique to MENA. European clinicians may face a parallel challenge in which a drug can be licensed, supported by evidence, and incorporated into clinical guidance, yet remains difficult to access because of cost, reimbursement restrictions, or service capacity.[3]

PILLAR 4: CARE COORDINATION AND SYSTEM FRAGMENTATION

Patients with Type 2 diabetes, hyperlipidaemia, obesity, and MASLD are typically managed separately for each condition in the corresponding specialty clinic, with no unified multidisciplinary care plan coordinating their treatment.[12] Addressing MASLD as the hepatic manifestation of metabolic disease has not been adopted in routine clinical practice; this is fragmented care in its most recognisable form, leaving patients with no clear structured care plan and no clear referral pathway. European primary care is not structurally different in this regard. Both settings therefore need the same structural solution: a primary care physician initiates MASLD screening and diagnostic pathway in at-risk patients and coordinates with the relevant specialties from that point forward.[9]

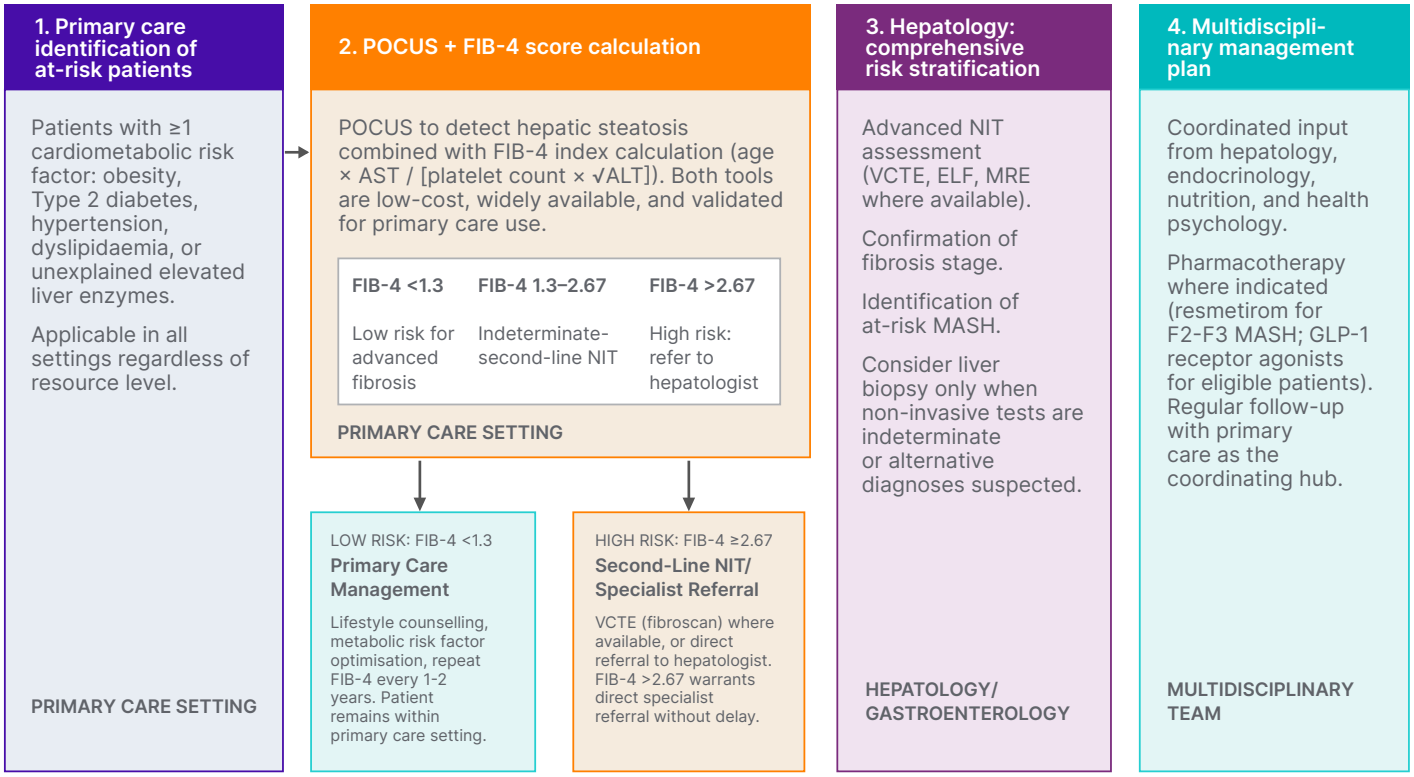
SHARED CHALLENGES, TRANSFERABLE LESSONS

The rising burden of metabolic diseases (obesity and Type 2 diabetes) across Southern and Eastern Europe mirrors the metabolic trajectory that previously preceded MASLD surge in the MENA region. Primary care system gaps and unpreparedness must be addressed, and routine metabolic screening protocols should be implemented to translate guidelines into active clinical practice. The patients are already there, and infrastructure must be ready for them.

Working within limited and variable resources, MENA clinicians have built practical MASLD care pathways. Point-of-care ultrasound screening combined with FIB-4 scoring, followed by selective referral for further evaluation, represents a resource adapted experience that is transferable and can be recognised and adopted by European primary care settings facing the same constraints.

MENA is a cornerstone in the global MASLD story, and it offers an early signal to healthcare systems worldwide. The clinical and strategic lessons from hepatitis C virus elimination experience are directly applicable to the ongoing MASLD challenge and represent a learning opportunity that deserves to be studied and globally adapted. For European health systems facing the same disease, the same patients, and the same challenges, MENA's experience is now documented and its lessons are available. What was learned under pressure in MENA, Europe can build on and adapt to its own context (Figure 2).

Figure 2: Proposed MASLD care pathway for challenging care settings: from primary care screening to multidisciplinary management.



Proposed MASLD screening and management pathway for primary care-led implementation in challenging care settings. The pathway is designed to function across resource-variable contexts using non-invasive, widely available tools.

ELF: enhanced liver fibrosis test; FIB-4: fibrosis-4 index; MASH: metabolic dysfunction-associated steatohepatitis; MASLD: metabolic dysfunction-associated steatotic liver disease; MRE: magnetic resonance elastography; NIT: non-invasive test; POCUS: point-of-care ultrasound; VCTE: vibration-controlled transient elastography.

CONCLUSION AND CALL TO ACTION

The challenges documented across MENA and European care settings will not be resolved through guidelines alone. MASLD requires coordinated action at the clinical, health system, and policy levels. Clinically, immediate priorities include improving physician and public awareness, strengthening medical education, and embedding non-invasive risk stratification into routine metabolic care. At the health system level, care pathways should be reorganised to support early identification, structured referral, access to appropriate diagnostic tools, multidisciplinary management, and equitable access to approved therapies. At the policy level, MASLD should be integrated more clearly into national non-communicable disease strategies, with governments and health ministries prioritising national screening approaches, locally adapted clinical guidance, implementation research, and sustainable access to pharmacotherapy.

MASLD is a global disease shaped by local health system realities. The MENA region, as one of the most affected areas worldwide, illustrates how high disease burden, variable resources, and fragmented care can expose the implementation gaps that many European systems are also beginning to face. The central task is no longer only to define MASLD, but to identify patients earlier, stage risk more consistently, and build care pathways that reach patients before advanced liver disease develops.

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