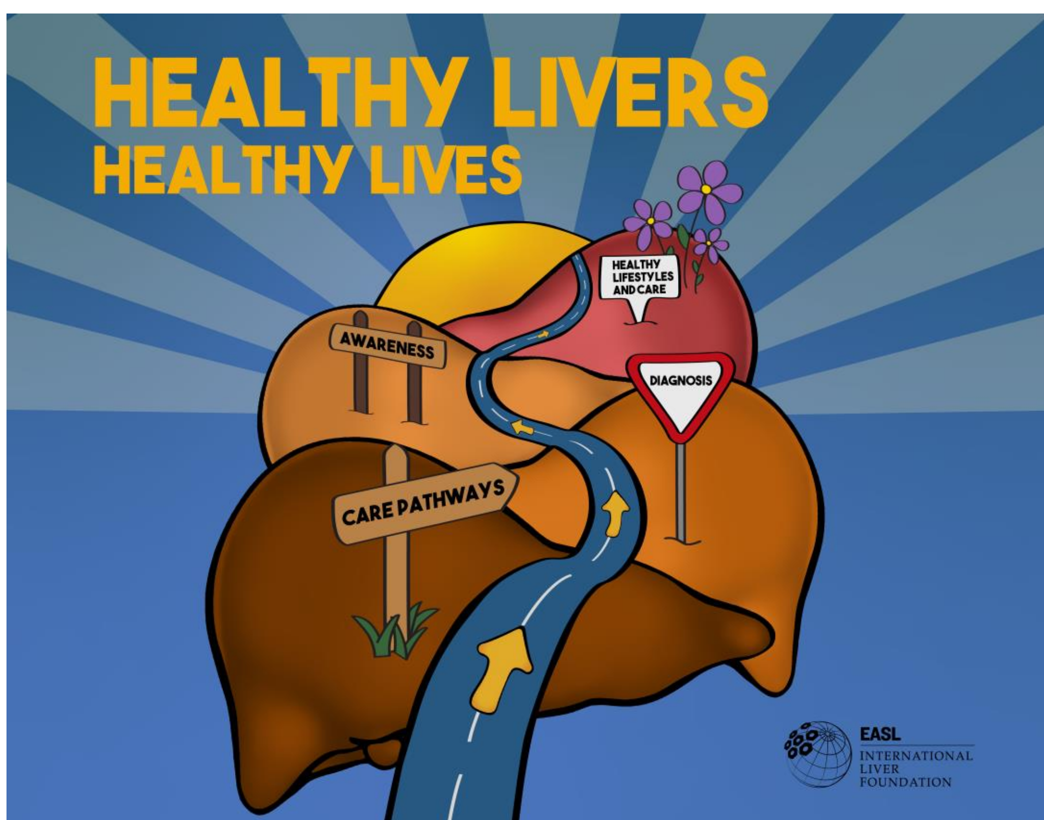

Report

Wilton Park virtual dialogue:

Consensus for Care Pathways for NAFLD/NASH

Tuesday 16 June and Wednesday 30 September 2020

WP1736V

In partnership with

Report

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WP1736V

In partnership with the EASL International Liver Foundation with support from Intercept.

NAFLD (non-alcoholic fatty liver disease) is a rapidly growing global health challenge. Despite affecting an estimated 2 billion people globally, the disease has received relatively little attention from policymakers, healthcare practitioners and global health experts. In 2020 and 2021 Wilton Park and the EASL International Liver Foundation (EILF) are partnering to hold a series of NAFLD dialogues which will holistically address a broad range of issues with the aim of advancing the global NAFLD agenda.

Two virtual dialogues, chaired by Nancy Lee (Wilton Park) and Jeffrey V Lazarus (EILF), were held on June 16 and September 30 2020, focused on the design and implementation of care pathways for patients with NAFLD. There is a clear unmet need related to care pathways for patients with NAFLD with no formal pathways existing in many healthcare settings. Where pathways are in place these are often not standardised according to best practices. These events convened 33 leading clinicians, researchers and patient advocates from across Europe and north America for detailed discussions on what concrete actions can be taken to improve models of care for NAFLD patients.

Executive summary

- On 16 June 2020 Wilton Park, in partnership with EILF, hosted a dialogue to establish a broad consensus for evidence-based guidance for healthcare providers and policy-makers seeking to design and implement optimal care pathways for NAFLD patients.
- The discussions were guided by a draft call to action, developed by EILF, which outlined eight recommendations for improving models of care. The recommendations centre around **what** services need to be provided, **where** the services should be provided, **who** should provide the services and **how** the services should be integrated. Through the meeting broad consensus was achieved related to the eight recommendations.

- On 30 September, a second dialogue was held, with the focus on considerations for implementing the eight care pathway recommendations within national healthcare settings. The discussions drew on key themes and ongoing issues that were highlighted during the first dialogue and started to consider how recommendations could be implemented at the national level.
- A number of important factors were raised which related to the implementation of these recommendations in national health systems; these will need to be considered by stakeholders as they seek to deliver policy change.
- There was broad consensus on the recommendations outlined in the call to action. This will provide clarity for policymakers and practitioners and can be a compass for guiding and informing the design of optimal care pathways for NAFLD.

Key themes across the eight recommendations

- **Screening, risk stratification and simple pathways:** Targeted screening, clear risk stratification approaches and simple pathways are required to ensure patients are linked to appropriate care, this requires close collaboration with general practitioners and other clinical specialities.
- **Role of primary care physicians:** Primary care physicians play a key role in identifying high-risk patients, yet they are often overburdened with the other issues and their knowledge of NAFLD is generally low. Therefore, care pathways must be as simple and efficient as possible to make them feasible for GPs. Further, engagement of GPs should be in the context of overall liver health.
- **Communication and education:** The liver health community should take the lead in educating both patients and practitioners about the disease. Communicating the impact of the disease to patient outcomes, including non-liver related outcomes, to other clinical specialists is a critical foundation upon which to build future improvements. To more broadly raise awareness of the impact of NAFLD, information on the burden of disease needs to be more readily available and communicated.
- **Cross-discipline collaboration:** Closer collaboration between disciplines is needed, but the liver community must be realistic and pragmatic in its approach to engaging other specialisations (e.g. endocrinology and cardiology) recognising health system barriers that inhibit closer collaboration and developing strategies to overcome these. We need to foster an environment of collaboration. Research collaborations, for example, can open doors and facilitate partnerships with other disciplines
- **Impact evidence:** The evidence base for NAFLD and NASH care models is limited. Additional operational research to document successful stories of improving care across a range of health system settings is needed.
- **Patient-centred design:** Ensuring care models and pathways are patient centred is critical. To achieve this, patients and patient advocates must be included in discussions throughout the design and implementation process.
- **Context is critical for implementation:** The recommendations provide a global framework for improving models of care which can inform the national discourse. When considering implementation, they can be adapted to the local context, such as the unique health systems structures.

- **Engaging all key stakeholder:** When seeking to improve care models, a wide range of stakeholders need to be engaged, from clinicians, to policy-makers, payers and patients (patients and patient advocates). Other patient disease groups, such as those addressing cancer and diabetes, should be engaged to raise awareness.

Introduction

1. Historically, limited attention has been paid to the management of NAFLD patients within healthcare settings with few formal care pathways or standardised models for managing patients. As a result, health outcomes for patients with NAFLD and NASH tend to vary widely.

2. As a multi-system disease covering a wide spectrum–from simple steatosis to NASH and advanced fibrosis–multidisciplinary models of care are needed that are tailored to a patient's place on the disease spectrum. There is an imperative to better our understanding of what is required across varied healthcare settings to provide patient-centred care to people with NAFLD. This will require a concerted and collaborative effort across clinical specialisations and the sharing of knowledge and ideas between organisations and across geographical borders.

3. The first step in this process requires building consensus on evidence-based best practice which can guide healthcare providers and policymakers designing and implementing care pathways.

4. The discussions during dialogue were guided by a draft 'Call to Action on the models of care for NAFLD and NASH' (see appendix). The Call to Action is structured around four key questions which form the foundation of quality models of care: 1) **what** services need to be provided, 2) **where** the services should be provided, 3) **who** should provide the services and 4) **how** the services should be integrated.

5. The draft Call to Action was informed by an ongoing systematic review of published models of care for NAFLD and NASH which is being undertaken led by EILF. The systematic review and Call to Action will be published in late 2020 with concrete recommendations that will be informed by the outcomes of this dialogue and other ongoing discussions.

6. The following report summarises the main discussions for each of the eight priority areas covered in the Call to Action.

What services should be delivered?

Recommendation 1: Patient-centred pathways for NAFLD and NASH patients, which are tailored to their position on the disease spectrum and the presence of comorbid conditions (medical algorithm)

7. There was consensus that to deliver appropriate care it is critical to identify the status of the disease, referring patients in advanced stages to specialists for further assessment and management.

8. In developing a clear care pathway, four questions should be addressed:

    i. Who are we screening (at risk group such as diabetes patients or the general population)?

    ii. What are we screening for (fatty liver or liver fibrosis)?

    iii. How are you screening (what tools are being used)?

    iv. How can we build an algorithm with the information provided to guide patients through the pathway? A patient-centred algorithm can be built by understanding what services are prioritised by patients with NAFLD/NASH and ensuring that required services are both available and accessible.

9. Many patients will first present in primary care, we need to increase awareness and build the case for why primary care practitioners should be concerned about NAFLD. There is also a need to strengthen the flow of information between primary and secondary care and ensure sufficient information is provided to patients about the services that are available to them.
10. The substantial burden of NAFLD, and the limited resources available for treating patients, dictates that those at high risk are prioritised for screening. Diabetes patients are a group of interest given the poor prognosis for patients with diabetes and advanced fibrosis. Screening should also be guided by the local epidemiology and health system context. In areas where the prevalence of NAFLD and common co-morbid conditions is high, and there is capacity to treat all patients with advanced disease, screening efforts can be expanded.
11. Rather than targeting all patients with NAFLD, the vast majority of whom will not have advanced disease or require intervention, there needs to be a more nuanced approach, with screening targeted at those with pre-existing conditions and at-risk patients, such as those with diabetes, cardiovascular disease and lipid disorder patients.
12. We can learn from lessons in viral hepatitis, focusing our efforts on identifying the undiagnosed advanced liver disease we know is present in communities.
13. Segmentation and stratification are critical for determining the services that a patient needs, we can consider concentric circles of care which are based on the services required and the intensity of a patient's care needs.
14. There is a real need for simpler screening processes, but a major barrier is a lack of clarity around what indicators should trigger a screening. Guidelines, such as the joint guidelines from EASL, EASD, EASO for screening, require updating with clear frameworks established for screening.
15. There was broad consensus that care pathways and management strategies should be patient centred. Patients should be actively involved in discussions about their care pathways and empowered and informed to ask the right questions.

Recommendation 2: National or regional guidelines on screening and testing including the use of on non-invasive testing (NIT)–which incorporate evidence-based best practices

16. Non-invasive tests (NIT) are the principle tools through which patient centred pathways can be implemented, different NITs are being employed to varying degrees at different levels of the healthcare systems.
17. Clear guidance and adequate information are key for the successful implementation of NITs, including which tests should be used, when and by who and how the results are interpreted based on predefined referral pathways.
18. Greater clarity regarding the scale of the problem and the consequences for patients, coupled with clear messaging regarding what practitioners are testing for and what the possible outcomes may be, will facilitate the effective use of NITs.
19. Various serum biomarkers (used in the calculation of scores and ratios) and elastography techniques are used across different healthcare settings. FIB-4 has been validated in several contexts and should be in widespread use in routine practice, including in primary care. Elastography is most commonly used in secondary care facilities generally to confirm a diagnosis of liver disease following a referral.
20. To be feasible in primary care, any NIT need to be simple and efficient, where practicable calculation of scores and ratios should be automated. Care pathways should provide clear guidance on the next steps, allowing for easy interpretation of test results (e.g. further assessment and specialist referral).

21. Education for practitioners on interpreting NIT results is important for ensuring adequate care, and for increasing awareness that the absence of cirrhosis does not imply the absence of liver disease.
22. Payers need to be included in the design of care pathways and the selection of risk stratification approaches, considering the cost effectiveness of different methods.

Recommendation 3: Guidelines on treatment strategies for patients related to their position on the disease spectrum, ranging from lifestyle interventions to pharmacological treatments

23. The increasing burden of NAFLD is mirrored by a growing burden of metabolic syndromes, including diabetes, with patients requiring complex care for multiple related comorbidity conditions.
24. Implementation of treatment strategies is not uniform. Clear guidelines on treatment strategies related to the patient's position on the disease spectrum are needed, this should flow directly from risk stratification approaches and is linked to the aforementioned concept of concentric circles of services needed and intensity.
25. There should be clearly defied pathways for treatment which outline the optimal clinical end point and include a focus on managing metabolic risk factors. We need to acknowledge the current blackspots in NAFLD management and seek to fill these evidence gaps.
26. There should be better utilisation of existing data and wider undertaking of additional operational and implementation research to build the evidence base for effective lifestyle interventions (e.g. diet and physical activity).
27. In the absence of approved pharmacological therapies for NAFLD/NASH, management options remain limited; lifestyle interventions and the management of metabolic complications remain the cornerstone of treatment. A lack of clarity on the intended end point for future pharmacological treatments is an ongoing challenge.

Recommendation 4: Prevention programmes for patients who are not yet on the spectrum of NAFLD or NASH but who have risk factors (e.g. comorbidities such as obesity and type 2 diabetes)

28. The involvement of primary care practitioners is crucial to enable effective prevention programmes, this requires awareness raising amongst GPs as to the risk for patients with untreated NAFLD. Risk groups who would benefit from early intervention should be clearly defined, such as those with type 2 diabetes or cardio-metabolic risk factors.
29. For those high-risk patients that are not yet on the disease spectrum there needs to be increased touch points with health services in order to provide an early diagnosis. This may require a restructuring of how assessments are provided to make this process more efficient.
30. The indicators that place patients under the specialisation of hepatology need to be better defined. Better defining the roles and responsibilities of specialists, primary care physicians and community services is important for enhancing prevention efforts, this needs to consider the availability of services and the existing burden on health care providers.
31. Prevention for high-risk patents requires close collaboration with those working to address common comorbidities and risk factors, namely obesity, diet and physical activity. As part of these efforts, we should seek to understand ongoing efforts to address these conditions in primary care and the community.

Where should services be delivered?

Recommendation 5: The role of primary, secondary and tertiary care providers in the management of patients with NAFLD and NASH

32. Following risk stratification care pathways should separate patients into low and high risk for fibrosis. Generally, those at low risk will be managed in primary care while those at high risk should be referred to a specialist at secondary care. This will be context specific, with primary and secondary care overlapping in some healthcare systems and will also be dependent on the existence of other comorbid conditions.
33. Primary care practitioners play a central role in screening patients and take on a significant responsibility for managing the disease in those patients not requiring specialist referral. Primary care practitioners also have a key role in educating patients about the disease and linking them to appropriate secondary health care services.
34. The lack of treatment options for patients with NASH and advanced fibrosis, including pharmacological treatments, contributes to limited interest in primary care settings.
35. Within secondary care, specialists outside hepatology and gastroenterology also play a role, notably endocrinologists and cardiologists who are likely to see patients with high risk for advanced fibrosis. There needs to be greater awareness amongst these groups, and clear guidance on what is required of them (use of routine NITs). Any messaging and guidance should be short, practical, easy and feasible to implement.

Recommendation 6: The benefits of co-locating NAFLD/NASH services with services for the treatment of common comorbidities

36. The co-location of services can be highly beneficial, ensuring efficiency in service delivery and convenience for patients.
37. There are several examples of multidisciplinary clinic models that offer a 'one-stop shop' for patients, providing assessments and clinical interventions for NAFLD and other co-morbidities (e.g. diabetes, cardiovascular disease) in one place at one time. Participants gave good examples of multidisciplinary clinics in the UK and Israel.
38. A multidisciplinary clinic can provide a highly patient-centric approach. These models are most commonly found at large hospitals in populous urban areas and are not practical in rural or low population locations.
39. The use of technology can also help to link people to services, bridging the divide when patients are not in close proximity to speciality care, for example tele-medicine or other virtual platforms can be utilised for consultations and for the provision of some services.
40. Where feasible certain services for NAFLD should be located in other specialist clinics. Screening for advanced fibrosis in diabetes clinics with the NITs is a logical starting point.

Who should deliver which services?

Recommendation 7: The composition and structure of the multidisciplinary teams responsible for the management of patients with NAFLD and NASH

41. The composition of a multidisciplinary NAFLD clinic should preferably include a hepatologist, a dietician or nutritionist, psychologist and a cardiovascular specialist or diabetologist. A specialist nurse could potentially offer support in navigating this team for patients and driving patient care.
42. At secondary and tertiary care level, focus should go beyond managing the liver, with attention also paid to other conditions including psychology, diet and nutrition.

43. It was suggested that pragmatism is needed when devising a multidisciplinary team, with patients' needs and the availability of resources being balanced. There were varied opinions as to which specialist would be most critical, with dietician and cardiovascular specialists most commonly named.

Coordination and integration

Recommendation 8: Strategies for ensuring the effective coordination of care between levels of service deliver and relevant specialties within specific hospitals and the broader healthcare system

44. While there was broad consensus that services should be integrated, several challenges relating to the practical implementation of strategies were raised. Potential barriers noted were funding, country-specific insurance reimbursement practices, challenges adapting clinical practice guidelines and issues of data protection.
45. Given the vast differences in health services between countries, integration strategies need to be tailored to the local context and identify and address the specific healthy system barriers to coordination and integration.
46. Critical to care coordination is the timely and accurate flow of appropriate information between different levels of service delivery (primary to secondary care) and between relevant specialisations.
47. COVID-19 has led to the scale up of service delivery innovation such as video health and teleconsultations which aim to deliver care continuity. For NAFLD, there was consensus that integration could be achieved in the absence of co-location through the use of service delivery innovations.
48. Operational and implementation research to monitor the implementation of innovate models of care will be key to building the evidence base and refining these approaches to deliver better patient outcomes.

Considerations for implementing care pathway recommendations

The following key areas were identified as being critical steps required to enable implementation of care pathway recommendations:

49. Creating awareness at the political level and gaining the buy-in of critical stakeholders, including payers:
    - Payers and policy-makers want a clear picture of what the future holds; what will be required; and what impact this will have (both financially, economically and on patient outcomes).
    - Consideration needs to be given to framing NAFLD as part of a multimorbidity disease model. This will help to gain traction amongst other disciplines and from policy-makers.
    - Focusing on the package of interventions guided by value-based medicine and bringing payers into the discussion early will be key to long-term success.
    - There are some examples of engaging at the political level, including in Germany, and of working with payers and care providers to develop care pathways as done in Camden and Islington (London, UK) and Calgary (Canada).
50. Identifying and engaging key stakeholders' in the design and implementation process:
    - Collaboration with other disciplines is critical to long-term success, framing NAFLD as part of multimorbidity can help to facilitate engagement and collaboration across disciplines.

- It is important to consider within national contexts, who the key stakeholder are, both organisations and individuals and how to bring these people into the discussion through highlighting the urgency and importance of NAFLD. The British Liver Trust have good examples of engaging the public to raise awareness of NAFLD with MPs.
- There are examples of successful collaboration between liver groups and other disease associations, including from Quebec (Canada).

51. Finding advocacy champions to raise the profile of NAFLD and drive policy change:
    - Patient groups are quite fragmented with national organisations often focused on one specific disease area. Other strong groups, such as cancer organisations, could be engaged since they bring a strong patient base and additional resources.
    - It will be important to identify well-established umbrella organisations that can support this agenda and raise it with policy makers and the wider public.

Conclusion

Broad consensus, relating to the eight recommendations outlined in the 'Call to Action', was achieved through this dialogue, particularly in key areas such as ensuring patient-centric approaches and integrating services. This consensus will offer much needed clarity for policy-makers and practitioners, helping to inform and shape future designs of optimal care pathways for NAFLD and NASH. A number of key considerations for implementing these recommendations have been identified; these will be taken forward into ongoing discussions to inform policy discussions in national care settings.

The systematic review which guided the development of the recommendations included in the Call to Action will be published in late 2020. A short policy brief will be developed by EILF to support advocacy efforts. This document will reflect the outcomes of the two Wilton Park dialogues.

EILF and Wilton Park are also collaborating on the development of a broader public health and policy roadmap for advancing the NAFLD agenda; this series on care pathways will contribute towards this process.

Report prepared by Natalie Taylor & Henry Mark with Nancy Lee and Jeffrey V Lazarus

Wilton Park | October 2020

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A Call to Action on Models of Care for NAFLD and NASH

Redefining care for people with fatty liver disease

Through this international call to action we aim to inspire change in how care pathways are designed and implemented for people with NAFLD by engaging with policymakers and practitioners to provide clear, evidence- based guidance on how healthcare settings can be restructured.

Why do we need a call to action?

NAFLD is the most prevalent liver disease in human history, with an estimated 2 billion people affected globally.[1] NAFLD is an umbrella term that describes a histological spectrum ranging from non-alcoholic fatty liver (NAFL) to the more aggressive non-alcoholic steatohepatitis (NASH). It is closely related to metabolic syndrome, obesity and type 2 diabetes[2] and is becoming an established risk factor for the 21st century's leading causes of death and disability including cancer, cardiovascular disease and type 2 diabetes. However, the phenotypes of NAFLD patients varies widely, with NAFLD also being observed in lean people, especially of Asian ethnicity.[3] NAFLD results in both metabolic and liver-specific complications making it a unique medical condition requiring complex care.[4] Left unaddressed, the burden of NAFLD is expected to grow over the next decade,[5] resulting in substantial economic and wellbeing losses and burdening healthcare systems.[6]

At present a holistic response to NAFLD is lacking, with limited attention paid to implementing public health prevention approaches or to improving the management of NAFLD patients within healthcare settings. Of 29 European countries surveys in 2019, none had a national strategy for addressing NAFLD, while only 35% had national clinical guidelines for management of the condition. NAFLD was also largely absent from the strategies aimed at addressing common comorbidities including obesity, diabetes and nutrition. [7]

There is a clear unmet need related to care pathways for patients with NAFLD. In many healthcare setting no formal pathway exists, and where pathways are in place they are often not standardized according to best practices. As a result, health outcomes for patients with NAFLD vary widely between, and even within healthcare settings.

There is an urgent need to improve our understanding of how to provide patient-centred care to people with NAFLD, with multidisciplinary models of care (MoCs) tailored to their place on the disease spectrum. This will require concerted and collaborative efforts across clinical specialisations and the sharing of knowledge and ideas between organisations and across geographical boarders. Similar work has previously been undertaken for hepatitis C where improved MoCs have resulted in more efficient and effective means of providing quality care to people in need.[8]

What EILF is doing to advance our understanding of models of care for NAFLD and NASH patients

The EASL International Liver Foundation (EILF) is working with a broad group of experts to advance our understanding of models of care for NAFLD patients. As part of this we are conducting a systematic review to identify published examples of comprehensive MoCs for NAFLD, and in partnership with Wilton Park will hold a series of consultations with experts from different global regions.

Through this work we aim to develop evidence-based guidance for healthcare providers and policymakers on what they need to do to provide effective care for these patients and to launch an inspirational global Call to Action.

Who should engage in this process?

EILF is seeking to engage with all stakeholders who have an interest in improving models of care for NAFLD patients, namely clinicians, researchers, patients and patient advocates, policymakers and civil society groups.

Critical discussions for redefining models of care for NAFLD and NASH

Our work centres on answering 4 key questions which are the foundation for designing quality models of care:

1) ***What services need to be provided?***

2) ***Where should services be delivered?***

3) ***Who should provide the services?***

4) ***How should all of the required services be integrated and coordinated within healthcare systems*?**

We have outlined a number of priority discussions areas for advancing our understanding of models of care for NAFLD and NASH patients to support healthcare providers in delivering care and to inform this Call to Action.

What services should be delivered?

1. **Define patient-centred pathways for NAFLD and NASH patients, which are tailored to their position on the disease spectrum and the presence of comorbid conditions**

The healthcare services required by NAFLD patients is dependent on their position on the disease spectrum. Establishing a clear management pathway that determines a patients' care needs and then links them to the appropriate services is the first critical step in developing effective MoCs for NAFLD.

There are several published examples such pathway. In Nottingham (UK) 4 clinical commissioning groups developed a pathway for the identification and risk stratification of liver disease–including NAFLD–in the community and referrals from primary to secondary care.[9] Further examples come from Oxfordshire (UK)

and Camden and Islington (UK) where pathways have been established for the risk stratification of patients and criteria established for referrals to hepatologists.[10,11]

2. **Gain consensus on screening and testing strategies –including the use of on non-invasive testing (NIT)–which incorporate evidence-based best practices**

The majority of NAFLD patients are likely to first present within primary care settings, however primary care providers have limited awareness of the disease and their role in managing it.[12,13] Identifying patients with advanced fibrosis is particularly important given the increased risk of complications and the need for aggressive clinical management. Liver biopsy, the gold standard diagnostic tool for determining NASH, is not a practical tool for use in primary care settings. There are however a number of non-invasive tests (NITs) with high negative-predictive value which can detect advanced liver fibrosis. These tests are a central element for the development of care pathway such as those described above.

Equally critical is the establishment of screening guidance for settings outside of primary care where NAFLD patients are likely to represent, namely diabetes clinics. Such guidance should consider the practicalities of implementing different screening tools within various clinical settings and outline pathways through which patients are referred to liver specialists for further investigation and management.[14]

3. **Develop guidelines on treatment strategies for patients related to their position on the disease spectrum, ranging from lifestyle interventions to pharmacological treatments**

The clinical management strategies of NAFLD are specific to the position of the patient on the disease spectrum. The management of modifiable risk factors, including diet/nutrition and physical activity remain the cornerstone of treatment for all patients.[15] The current management of patients with advanced fibrosis is complicated by the limited number of pharmacological treatments currently available.[16] In addition to managing liver related complications, a proportion of patients with NAFLD also require services for the presence of comorbidities, including cardiovascular disease and diabetes. Clear guidance on what services are required by individual patients, and how these patients will be linked to the required these services is critical to the efficient and effective delivery of care.

4. **Outline actions for preventing disease progression in patients not requiring specialist hepatology care**

The majority of patients with NAFLD do not require intensive clinical management led by a hepatologist. Patients with NAFL or early stages of fibrosis can be managed in primary care with the aim of preventing disease progression or achieving remission. Prevalent non-communicable diseases such as obesity, T2DM, CVD and NAFLD, share a number of common risk factors, including poor diets and physical inactivity. This presents an opportunity for primary care and community interventions to collectively to address these risk factors and holistically address patient needs. This requires practitioners to outline the availability of primary care and community services, to identify which patients will benefit from access these services

and to develop systems for linking patients with the services. These efforts will be central to lowering the prevalence of severe disease reducing the burden this placed on healthcare systems.

Where should services be delivered?

5. **Understand the roles of and interactions between primary, secondary and tertiary care providers**

Healthcare services for NAFLD patients will be delivered at different level within the health care system. Understanding which services will be delivered in primary, secondary and tertiary care and the interactions between primary, secondary and tertiary care providers is important to the delivery of coordinated, effective and efficient MoCs. For the majority of patients, the first stages of clinical assessment and risk stratification are likely to take place in primary care, followed by further assessment and a definitive diagnosis by specialists in secondary care. Patients with advanced fibrosis, cirrhosis and end-stage liver disease will require more aggressive management by led by specilists,[17] and may require including transplantation. In the stages of NAFLD the hepatic component of the disease can generally be managed in primary care. Given the lack of awareness of NAFLD amongst primary care providers, educational activities will be needed to facilitate the scale up of interventions in primary care.

6. **Explore the benefits of co-locating NAFLD/NASH services with services for the treatment of common comorbidities**

The location of services is critical to the early diagnosis and effective management for NAFLD patients. Multi-disciplinary care clinics have numerous benefits in delivering coordinated care to NAFLD patients.[18] Co-location of specific services in strategic locations, such as diagnostic screening for NAFLD in diabetes clinics, can assist in the identification of previously undiagnosed NAFLD cases.[19] Decisions on where services can and should be co-located will be informed by the local healthcare system structures, in populous urban settings co-location may be more feasible than in rural areas. For services that do not require the physical presence of the patient (e.g. counselling sessions) virtual co-location of can also be considered.

Who should provide the services?

7. **Define the composition and structure of the multidisciplinary teams responsible for the management of patients with NAFLD and NASH**

It is clear that care for NAFLD patients requires a multidisciplinary team. It is important to define the composition of this team, such as the different specialist who need to be engaged, and to outline the structures needed to ensure the effective flow of information within the team and externally to other key stakeholders. According to the Birmingham (UK) experience a dedicated NAFLD clinic should incorporate inputs from hepatologists, diabetologists/weight loss physicians, diabetes specialist nurses (DSN), dieticians and practitioners proficient in the use of non-invasive diagnostic tools.[18] It will be important

understand how the composition and structure of such a multidisciplinary team varies within and between different health system settings, and to understand the trade-offs that need to be made when devising a team considering factors including health system resourcing.

How should all of the required services be integrated?

8. Establish effective systems for coordinating and integrating care across the healthcare system

To deliver effective patient centred care for people with NAFLD patients it is critical to ensure close collaboration and coordination between service levels (primary, secondary and tertiary) and different specialities (e.g. hepatology, endocrinology and cardiology). Central to this is the flow of information between levels of care, different specialists and patients. Examples exist of multi-disciplinary hepatology clinics that facilitate connections between services.[10] A dedicated NAFLD clinic, as implemented in Birmingham, UK, is one strategy for providing multidisciplinary care which reduces the need for attendance at multiple clinics thus lessening the burden on patients.[18]

Next steps to redefine care for NAFLD

We actively encourage ministries of health and relevant agencies to improve care for patients with NAFLD. This Call to Action can help stakeholders to identify and outline national and subnational priorities and can be used as a blueprint for guiding action.

As a first step, countries can review current care pathways. While health systems vary widely, depending on the national or local context, the core elements of good care pathways, such as a clear articulation of the services being provided, who provides these services and how these services are integrated, remain constant across settings. Such a review should include a mapping of stakeholders who will be key to delivering sustained improvements in NAFLD care pathways.

Based on an understanding of how care is currently provided to patients with NAFLD, and guided by the 8 steps in this Call to Action, stakeholders can outline concrete steps for delivering improvements.

As we seek to develop optimal care models for NAFLD, we need to continue to grow the evidence based and address critical questions. This requires us to place knowledge management and information sharing at the centre of our efforts. A number of methods can be employed to generate evidence. Hospital audits of care pathways can provide detailed information on how new MoCs are being delivered and can help to identify systems barriers to optimal implementation, such as issues with linking patients to the required services. It is important that information flows efficiently within and between countries allowing for continuous improvement of care pathways based on emerging best practices. This will require dedicated structure for collating and sharing information at the national. regional and global level. Documenting the patient experience is also key to building patient-centred models that fit the needs of affected people. Finally, but critically, we also need to understand how different models of care impact patient outcomes.

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Summary of the literature related to each discussion point

1. **Define patient-centred pathways for NAFLD and NASH patients, which are tailored to their position on the disease spectrum and the presence of comorbid conditions**

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2. **Gain consensus on screening and testing strategies –including the use of on non-invasive testing (NIT)–which incorporate evidence-based best practices**

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3. Develop guidelines on treatment strategies for patients related to their position on the disease spectrum, ranging from lifestyle interventions to pharmacological treatments

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4. Outline prevention programmes for patients who are not yet on the spectrum of NAFLD and NASH but have risk factors (e.g. comorbidities such as obesity and type 2 diabetes)

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5. **Understand the role of primary, secondary and tertiary care providers in the management of patients with NAFLD and NASH**

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6. **Explore the benefits of co-locating NAFLD/NASH services with services for the treatment of common comorbidities**

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7. **Understand the composition and structure of the multidisciplinary teams responsible for the management of patients with NAFLD and NASH**

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8. Define key strategies for ensuring the effective coordination of care between levels of service deliver and relevant specialties within specific hospitals and the broader healthcare system

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