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# Two mental models of integrated care for advanced liver disease: qualitative study of multidisciplinary health professionals

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## ABSTRACT

**Objectives** The purpose of this paper is to present two divergent mental models of integrated advanced liver disease (AdvLD) care among 26 providers who treat patients with AdvLD.

**Setting** 3 geographically dispersed United States Veterans Health Administration health systems.

**Participants** 26 professionals (20 women and 6 men) participated, including 9 (34.6%) gastroenterology, hepatology, and transplant physicians, 2 (7.7%) physician assistants, 7 (27%) nurses and nurse practitioners, 3 (11.5%) social workers and psychologists, 4 (15.4%) palliative care providers and 1 (3.8%) pharmacist.

**Main outcome measures** We conducted qualitative in-depth interviews of providers caring for patients with AdvLD. We used framework analysis to identify two divergent mental models of integrated AdvLD care. These models vary in timing of initiating various constituents of care, philosophy of integration, and supports and resources needed to achieve each model.

**Results** Clinicians described integrated care as an approach that incorporates elements of curative care, symptom and supportive care, advance care planning and end-of-life services from a multidisciplinary team. Analysis revealed two mental models that varied in how and when these constituents are delivered. One mental model involves sequential transitions between constituents of care, and the second mental model involves synchronous application of the various constituents. Participants described elements of teamwork and coordination supports necessary to achieve integrated AdvLD care. Many discussed the importance of having a multidisciplinary team integrating supportive care, symptom management and palliative care with liver disease care.

**Conclusions** Health professionals agree on the constituents of integrated AdvLD care but describe two competing mental models of how these constituents are integrated. Health systems can promote integrated care by assembling multidisciplinary teams, and providing teamwork and coordination supports, and training that facilitates patient-centred AdvLD care.

## STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The multidisciplinary research team used a rigorous approach to data collection, analysis and reporting.
⇒ Non-clinician interviewers conducted interviews and analysed data, thereby reducing bias.
⇒ Findings may be limited to United States Veterans Health Administration health system.
⇒ Participants' perspectives may be skewed toward specialty care context.

## INTRODUCTION

Advanced liver disease (AdvLD) is a serious illness with high rates of morbidity and mortality. Liver transplantation offers an opportunity to cure AdvLD; however, few patients receive it.[1] Most patients, including those on the transplant waiting list, live with and die of their liver disease.[2] Their clinical course is marked by declining health, increasing symptom burden and frequent hospitalisations.[3] The symptom burden of AdvLD is comparable to advanced cancers; symptoms include pain, dyspnoea, difficulty sleeping, anorexia and fatigue, bleeding, confusion, depression and anxiety.[4] Furthermore, patients and caregivers report marked uncertainty about prognosis and AdvLD course, complex care needs, and poor coordination and communication with and among clinicians.[5 6] A recent systematic review identified significant gaps in understanding and information about AdvLD aetiology, course, symptoms, and prognosis and the related psychosocial distress among patients and caregivers as well as a lack of confidence about when and how to have AdvLD prognosis and advance care planning discussions among primary care clinicians.[7]

To address these gaps, we proposed an integrated model of patient-centred AdvLD care that blends curative care (transplant referral and disease modifying treatments), supportive care (symptom management and psychosocial care), and advance care planning and end-of-life care based on identifying patient's priorities and then aligning care options to achieve the identified priorities.[8 9] Health professionals report difficulty coordinating care, especially knowing when or how to offer supportive care, prognosis discussions and advanced care planning.[7] To facilitate better integration of AdvLD care, the American Gastroenterological Association recently provided a clinical practice update that recommends incorporation of palliative care principles for any patient with cirrhosis, irrespective of transplant candidacy.[10] In this context, palliative care is inclusive of supportive care as defined above coupled with advance care planning and goals of care conversations in the context of assessing and cultivating prognosis awareness and is delivered concurrently with life prolonging treatments, tailored to stage of disease. However, in practice, hesitancy and barriers to use of palliative care are common among AdvLD clinicians. Specialists who provide care for AdvLD often believe that palliative care instils fear and anxiety among patients because of a belief that involvement of palliative care would mean that nothing more could be done for the underlying AdvLD.[11] These specialists acknowledge the importance of having palliative care services available for AdvLD and trust palliative care clinicians to care for their patients but cite cultural factors and patients' unrealistic expectations about prognosis as barriers to referral.[12] Clinicians also disagree on the appropriate timing and setting of advance care planning discussions.[7 12]

Implementation of integrated care models in AdvLD, like cancer[13] and advanced heart failure,[14] is hindered by professional norms, insufficient training and lack of consensus on professional roles and responsibilities.[15] Clinician attitudes can also affect the adoption of integrated care in serious illness.[13 16] Understanding perceptions and practices of AdvLD care integration among specialist, primary care physicians and healthcare professionals (ie, mental models of AdvLD care) is a starting point. Mental models are psychological representations of an individual's (or group's) dynamic beliefs about the truth and nature of a phenomenon; are broad simplifications of that phenomenon; consist of knowledge, behaviours and attitudes for making judgements, solving problems and ultimately acting on decisions; and are formed (and reformed) from interactions with the environment and other people.[17] Mental models are useful for understanding key factors pertaining to diffusion of healthcare innovations: perception of the change, characteristics of adopters and laggards, and perceptions of contextual factors (communication, incentives, leadership, etc) related to the change.[18 19] The current study identifies two competing mental models of integrated AdvLD care and describes professional roles and contextual factors that can affect adoption.

## METHODS

### Study design and setting

Reporting of our research methods aligns with the Consolidated Criteria for Reporting Qualitative Research guidelines.[20] We conducted in-depth qualitative interviews with clinicians who care for patients with AdvLD at three geographically dispersed sites within the Veteran's Affairs healthcare system: Southeast Texas, Northern California and New England. See table 1 for site characteristics. All three sites include liver tumour boards. One site (Southeast Texas) offers transplant services and two sites (Northern California and New England) refer to nearby VA regional transplant centres that provide transportation and lodging for the Veteran and caregiver.

Clinicians were referred by local chiefs of hepatology and gastroenterology. Clinical leads at each site provided names of clinicians who work with patients with AdvLD. We stratified the names by profession/role and recruited participants from each strata. This strategy allowed us to capture a variety of perspectives on AdvLD care. Thirty-three clinicians were contacted via email and invited to participate in the study; 26 completed interviews. Three non-participants declined to participate due to time constraints; remaining non-participants did not provide an explanation. Participants were thanked but did not receive incentives for their participation.

### Patient and public involvement

Patients or the public were not involved in the design, or conduct, or reporting, or dissemination plans of our research.

### Data collection

Our multidisciplinary research team developed a semi-structured interview guide based on dimensions of the integrated model of AdvLD.[8] The interview guide was designed to elicit clinicians' perspectives and experiences providing integrated care for liver disease, including definitions of curative, supportive and palliative care; at what point in a patient's illness trajectory the various approaches to care are emphasised; degree to which these approaches to care are integrated; and barriers and facilitators to integrated AdvLD care. The interview guide was revised throughout the interviewing process to reflect emergent findings and clarify developing areas of interest (online supplemental appendix 1). Two medical sociologists (JA and CG) trained in qualitative methods conducted semi-structured, one-on-one, one-time, telephone interviews between October 2018 through November 2019. Both interviewers are non-Hispanic, white females with PhD's in sociology. Both have extensive experience conducting

Table 1 Study sites and clinical services characteristics (created by the authors)

| | Site A | | Site B | | Site C | |
|---|---|---|---|---|---|---|
| | Liver tumour board—yes | | Liver tumour board—yes | | Liver tumour board—yes | |
| Specialty | Providers (number) | Colocated in GI clinic? | Providers (number) | Colocated in GI clinic? | Providers (number) | Colocated in GI clinic? |
| Hepatology physicians | 5 | | 3 | | 2 FT, 3 PT | |
| Hepatology PA | 2 | | 0 | | 0 | |
| Hepatology NP | 1 | | 3 | | 1 | |
| Hepatology nurse | 0 | | 0 | | 1 FT, 1 PT | |
| Care coordinator | 0 | | 0 | | 2 | |
| Palliative care (inpatient) | 1 (consult) | | 1 (consult) | | 3 PT | |
| Palliative care (outpatient) | 1 (consult) | No | 2 (consult) | No | 1 PT | Yes |
| Nutrition | 3 PT (consult) | No | 0 | No | 0 | No |
| Rehabilitation | 5 (consult) | No | 0 | No | 0 | No |
| Social work | 1 | Yes | 1 (consult) | No | 1 PT | Yes |
| Clinical pharmacist | 1 (consult) | No | 1 (consult) | No | 1 PT | Yes |
| Addiction medicine | 1 (consult) | No | 1 (consult) | No | 1 PT | Yes |
| Health psychology | 0 | No | 0 | No | 1 PT | Yes |

FT, full time equivalent; GI, gastroenterology or hepatology ; HCV, hepatitis C virus; NP, nurse practitioner; PA, physician assistant; PT, part time equivalent.

qualitative interviews with clinicians, analysing data and presenting qualitative findings. Researchers did not have a relationship to participants prior to the study. Prior to participating, clinicians were informed of the interviewers' credentials and goal of exploring clinicians' experiences treating patients with AdvLD. Interviews ranged from 31 to 78 min in duration (average 58 min). All participants provided verbal informed consent twice—prior to recording and then again after recording started for documentation. With participants' permission, interviews were audio recorded, transcribed verbatim and pseudonymised for analysis. Interviewers also produced pseudonymised, handwritten field notes during the interviews. While participants did not review completed transcripts, interviewers were trained to check for accuracy of understanding during interviews. Interviewers confirmed accuracy of transcription on receipt of each transcript.

### Data analysis

Data were analysed as they were collected, and emerging findings informed areas of focus for subsequent interviews. Analysis was guided by principles of framework analysis,[21] a form of thematic analysis, which allowed for a deductive approach to derive themes from the integrated model of AdvLD,[8] as well as an inductive approach to identify themes from participants' narratives. Several members of the analytic team reviewed early transcripts, created memos and created a preliminary codebook. Codes were anchored in domains of the integrated model of AdvLD as well as emergent findings.[22] Codebooks were piloted and revised with additional codes added as necessary. Two team members (JA and CG) independently coded all transcripts, and a third coder performed secondary coding to ensure accuracy of code assignments.[23] Coding discrepancies were resolved in weekly team meetings. Coding was performed using Atlas.ti (V.8.2). After initial coding, coders summarised themes and identified meaningful associations and patterns in the data.[24]

The full study team participated in the integration of codes into themes describing perspectives of integrated care and elements of an ideal model of integrated care for AdvLD. At a sample size of 26, data redundancy indicated thematic saturation—the point at which no new themes emerged.[25]

## RESULTS

### Participant characteristics

Participants' characteristics are presented in table 2. The sample of clinicians represented multiple professions, including gastroenterology, hepatology and transplant physicians (34.6%), gastroenterology physician assistants (7.7%), gastroenterology/hepatology nurses and nurse practitioners (27%), social workers and psychologists (11.5%), palliative care providers (15.4%) and pharmacists (3.8%).

### Shared views across mental models

Analysis revealed that clinicians value integrated AdvLD care and they identified common components of an integrated care approach. Clinicians ubiquitously indicated that the integrated model is ideal in liver disease care, given that liver disease can progress quickly and have unexpected turns. Clinicians described integrated care as

Table 2 Demographic characteristics of the study population (created by the authors)

| Healthcare providers (n=26) | Number (percentage) |
|---|---|
| Professional role | |
| Gastroenterology, hepatology or transplant physicians | 9 (34.6) |
| Gastroenterology physician assistants | 2 (7.7) |
| Gastroenterology/hepatology nurses and nurse practitioners | 7 (27) |
| Social workers or psychologists | 3 (11.5) |
| Palliative care providers | 4 (15.4) |
| Pharmacists | 1 (3.8) |
| Gender | |
| Female | 20 (77) |
| Male | 6 (23) |
| Years in liver care | |
| 0–10 | 13 (50) |
| 11–20 | 4 (15) |
| 21–30 | 2 (8) |
| No response | 7 (27) |

an approach that incorporates elements of curative care, symptom management and supportive care, advance care planning, and end-of-life services from a multidisciplinary team (see box 1A). One shared view is the definition of curative care as remedies that bring about recovery from disease.

> When you talk about cure, you're talking about things that actually modify or cure the underlying liver disease or liver transplantation. (Clinician #17, Gastroenterology Physician, >15 years in liver care)

While consensus exists on the value of integrated care and the intent of curative care, descriptions of integrated care diverged into two distinct mental models: the sequential transitions model and the synchronous care model. These models vary in how clinicians envision initiation of various constituents of care, their philosophy of integration, and staffing and resources needed to achieve integrated care (see box 1B).

### Sequential transitions model of integrated AdvLD care

#### Constituents of care and timing of initiation

The sequential transitions model of care suggests that patients transition from curative focused care (led by the liver specialists) to palliative care (guided by palliative care clinicians) as health status declines. In this model, curative care and palliative care are distinct stops along the trajectory of liver disease. Clinicians who described the sequential transitions model were often unfamiliar with the term supportive care. Those who were familiar with supportive care indicated that symptom management

**Box 1 Participants' mental model of integrated advanced liver disease (AdvLD) care (created by the authors)**

**A. Constituents of AdvLD**

Shared mental model of integrated AdvLD constitutes:

⇒ Curative care: care that cures (permanently removes) or significantly modifies the underlying liver disease or care resulting in liver transplantation.

⇒ Symptom management and supportive care: pharmacological and non-pharmacological interventions that address symptoms from complications of cirrhosis; improve functioning, nutrition and rehabilitation; and offer information, care planning and emotional support for patients and caregivers.

⇒ Advanced care planning and end-of-life care: discussions of prognosis and advance care preferences; comfort care and code status determinations; and care at the end-of-life focused on management of symptoms, psychosocial care and quality of life.

Disagreements about palliative care: some participants limited the definition to comfort-focused care that involves counselling, code status discussions and end of life symptoms led by palliative care specialists. Other participants viewed supportive care, advanced care planning and aspects of symptom management as additional components of palliative care delivered by various members of the multidisciplinary team, including but not exclusive to palliative care specialists.

**B. Timing of AdvLD care services shape two competing mental models of integrated AdvLD care**

⇒ Sequential transitions: integration of two distinct goals of care—life prolongation versus comfort and quality of life with a clear distinction when the transition is made. Primary care and liver specialists focus on transplant referral and prevention/management of complications to prolong life. Palliative care guides comfort care, symptom management and quality of life. Clear distinctions in roles and responsibilities exist but coordination barriers remain, especially across the transition. Participants describing this model provide few details about professionals and interventions that improve function and quality of life outside of managing complications.

⇒ Synchronous care: a multidisciplinary team with distinct roles coordinates each of the AdvLD care constituents synchronously. This approach allows for earlier advance care planning and symptom management provided by various clinicians. Shared responsibilities among primary, liver specialty and palliative care professionals exist to honour established relationships. Participants describe additional resources and personnel that further expand this model of integrated care, but barriers to dissemination exist.

**C. Teamwork and coordination supports for synchronous integrated AdvLD care model**

⇒ Colocation of care of multidisciplinary team at same site:

⇒ "We started having our palliative people join us during the clinic hours on Mondays. And…if the patient needs to be seen by the palliative folks then right after the liver clinic they go straight to palliative. And it's basically one appointment." (Clinician #10, Case Manager for Liver Transplant Care Coordination, 2–5 years in liver care)

⇒ "When the clinic is running well and we are in good communication with the attendings, we'll be in the room when they deliver that prognosis to do like a warm handoff to our team. So you know [the] patient's family will get the news and then … we have our palliative care team available [and ask them], 'Would you like to meet with them for a little bit?'" (Clinician #15, Palliative Care Social Worker, 2–5 years in liver care)

Continued

**Box 1 Continued**

⇒ "The more people involved the more complicated it is [to coordinate schedules, and] you probably would need a lot more space. So, it is a very good concept but it is very difficult to execute." (Clinician #5, Hepatology Physician, >20 years in liver care)

⇒ Encourages informal conversations that benefit patient care:

⇒ "A lot of times I just … walk in and I say hi to everybody and people just start talking to me about a particular Veteran and then I'll let them know what I can do to help them, then we'll put in like return to clinic orders for them to see me or some other sort of process for them to see me still. A lot of it is like that, it's sort of informal you know chats between the different people of the liver team." (Clinician #11, Clinical Health Psychologist, 2–5 years in liver care)

⇒ Weekly multidisciplinary case conference at one site facilitates collective care plan discussion:

⇒ "We have a multidisciplinary conference here every week…all of us are there one morning for an hour, hour and 15 minutes min and we review [patients'] images. There is a surgeon there. There are a couple hepatologists…diagnostic radiologists. There are interventional radiologists. And there are several nursing and supportive staff and mid-level providers and residents and students…And we formulate a plan for each patient… consultations are placed, and they are actually undertaken, and patients are treated." (Clinician #18, Gastroenterology and Hepatology Physician, 2–5 years in liver care)

and supportive care occur earlier in the illness trajectory and may co-occur with curative care.

> Supportive is if someone has cirrhosis and we give them diuretics to reduce the fluid…supportive is kind of symptom control. And then palliative is more, kind of more of a focus on comfort…the focus shifts from the length of life, like away from necessarily preventive testing or lab tests more to just doing symptom relief. (Clinician #23, Gastroenterology Physician, 2-5 years in liver care)

In the sequential transitions model, some clinicians defined palliative care as comfort-focused care that involves counselling, code status discussions and end of life decisions and specified that this occurs later in the illness trajectory.

> Palliative care happens at the very end… if it ever happens. (Clinician #17, Gastroenterology Physician, >15 years in liver care)

### Philosophy of integration

In this model, the degree of integration hinges on the ease of referrals, particularly to designated palliative care providers. Integration, in this view, describes how easily patients can be referred for comfort focused care when they are no longer being treated with curative intent. This view is evident in the following quotation:

> If we have a patient … and we've been curative and now they're no longer a candidate and they need to do palliative care, I think it's integrated…I can think of a few patients of ours that we had to…move towards palliative care and the transition went very smoothly. So I would say yeah, they're integrated. (Clinician #22, Registered Nurse, Liver Transplant Coordinator, >20 years in liver care)

Several clinicians illustrated the sequential transitions model of care in discussing liver transplant patients, who, in this view, are being treated with curative intent, and therefore, are not appropriate for palliative care. Within the sequential transitions model, transplant candidates are not seen by palliative care providers, but as some patients are excluded from transplant candidacy, they are no longer treated with curative intent and are transitioned to palliative care.

> If those patients that are not liver transplant candidates, due to age, lack of support, comorbidities, those patients need, automatically…consultation with palliative care…Change in…the clinical status, those patients need to mention whether they are liver transplant candidates or not. And if they are not, then the next step is to have goals of care discussion, palliative care consultation, or even hospice. (Clinician #21, Gastroenterology and Transplant Hepatology Physician, 2-5 years in liver care)

Thus, in the sequential care approach, curative and palliative care are separate and distinct points along the AdvLD trajectory.

### Staffing and resources

Participants who described the sequential transitions mental model were from study sites where they identified more barriers and fewer facilitators to accessing supportive and palliative services. Clinicians noted that many services needed by patients with AdvLD are physically disbursed and thus, not well integrated, and less accessible for patients. Clinicians across all three sites viewed physically disbursed services as less integrated and less accessible for patients. Clinicians noted that patients can be referred to services like palliative care, social work, mental health and physical therapy, but if team members are physically disbursed, patients are scheduled to receive the service at a different time. Clinicians also acknowledged that their site experienced other barriers to referrals including inadequately staffed palliative care service. A participant at one such site succinctly stated:

> Palliative care is a luxury item. (Clinician #25, Palliative Care Provider, 10-15 years in Palliative Care)

## Synchronous care model of integrated AdvLD care

### Constituents of care and timing of initiation

In contrast to the sequential transitions mental model, an alternative synchronous care model emerged. The synchronous care model was described as a multidisciplinary team of providers working simultaneously to address patients' needs through curative care, symptom

management and supportive care, advance care planning, and end-of-life services. The synchronous care approach includes supportive care for patients treated with curative intent, earlier introduction of advanced care planning and symptom management, and a continued relationship with the hepatologist even after the patient moves toward more supportive and comfort focused care.

Clinicians who described the synchronous care model defined supportive care as a host of pharmacological and non-pharmacological interventions aimed to improve patients' quality of life and functioning. These clinicians viewed palliative care as an inseparable part of supportive care that should occur throughout the illness trajectory.

A palliative care social worker expressed the importance of early initiation of palliative care in the synchronous care approach:

> I think it's what we need to be doing because…they can be receiving curative intent but we also know that these diseases are really serious and that things can change….When we can at least start having the conversation when someone's getting curative intent, we can be there for when the goals start to change. (Clinician #15, Palliative Care Social Worker, 2-5 years in liver care)

### Philosophy of integration

In contrast to the view of integration as hinging on ease of referrals, in the synchronous care approach, the degree of integration involves close teamwork and comanagement of patients. One hepatologist described her philosophy surrounding the synchronous care approach to integrated care:

> If I'm taking care of a patient for years, why should I absolve myself of the nitty gritty of the end of their life because there's a palliative care service to do that?… I want to introduce them to the palliative care service so that they have the comfort of knowing that I've referred them and that we're all here together…. As opposed to, I'm done with you–go talk to the palliative care people. I don't think that's well integrated. (Clinician #16, Hepatology Physician, >15 years in liver care)

### Staffing and resources

The synchronous care model requires a high degree of teamwork and coordination among multidisciplinary professionals. Participants described examples of active supports for teamwork and coordination to facilitate synchronous care (see box 1C). Clinicians discussed the importance of having a multidisciplinary liver team *colocated in the same clinic*. The colocated clinic featured at one site encouraged *formal collaboration often through informal conversations* that benefited patient care. At this site, the synchronous approach was evident in the allocation of staffing and space resources and a local culture that included palliative care providers routinely consulting with patients receiving curative care. Colocated services are better integrated and can ensure that patients are able to access needed services. As one liver transplant hepatologist described, returning to the hospital for an additional appointment can be challenging:

> Sometimes people who really need a lot of palliative care and supportive care, there are issues related to coming back, transportation, things of that nature. So, whatever we can provide in one session, that's always better. (Clinician #18, Gastroenterology and Transplant Hepatology Physician, 2-5 years of liver care)

An alternative approach to colocation used at one site is *multidisciplinary case conference* presentations.

Clinicians who described the synchronous care model discussed the importance of having a multidisciplinary team integrating supportive care, symptom management and palliative care with liver disease care. They suggest that a multidisciplinary team for integrated AdvLD care includes: hepatologists, interventional radiologist for patients with liver cancer, palliative care physicians, psychologist or behavioural medicine, social worker, dietician, physical therapist, pharmacist, case manager or care coordinator, administrative support staff, including a dedicated scheduler, peer support, and a chaplain. Table 3 describes specific supportive and palliative care professionals and how their responsibilities support a synchronous integrated care model.

## DISCUSSION

This study examined two mental models of integrated care for AdvLD. Participants described the importance of an integrated approach to AdvLD care and they shared views of its core constituents: curative care, symptom management and supportive care, and advanced care planning and end-of-life care. Participants agreed on the potential role of palliative care but disagreed on the scope of palliative care and responsibilities of palliative care clinicians. This ultimately resulted in two distinct mental models of integrated AdvLD care: sequential transitions versus synchronous care. Both models envision a multidisciplinary team with specific roles and examples of teamwork and coordination facilitators. However, the timing of when to initiate AdvLD constituents and their relative importance differed between the two models. These models also vary in their philosophy of integration, and staffing and resources needed to achieve integrated care. Providers at cites that lack staffing and resources often describe the sequential transitions model, whereas providers at cites with adequate staffing and resources tend to share a mental model of care that can be described as the synchronous care model.

The sequential transitions model resembles an increasingly anachronistic dichotomy of a largely curative and symptom management focus followed by a transition to an end-of-life oriented palliative care without curative intent.

Table 3 Multidisciplinary team members and roles for integrated advanced liver disease care (created by the authors)

| Key personnel | Role | Supporting quotations |
|---|---|---|
| Palliative care professionals | ► Palliative care providers embedded in specialty clinics in complementary roles | 'So we get to meet people really in an ideal situation versus in the emergency room or ICU [intensive care unit], but we also meet people there too…We get a lot of consults…I think they count on us to help out with very complex symptom management issues, and goals of care conversations.' (Clinician #12, Advanced Practice Registered Nurse for Palliative Care, 2–5 years in liver care) |
| Behavioural and mental health professionals | ► Includes therapists, behavioural health experts, psychiatrists and psychologists<br>► Address psychological and psychosocial issues; enhance access to addiction and substance abuse care<br>► Chaplains can provide supplemental support | 'I think the mental health and health psychology aspects are big when we're dealing with patients that have alcohol use disorders and have substance use disorders and have advanced liver disease and don't really see a purpose in you know stopping or cutting back on their use.' (Clinician #8, Clinical Pharmacy Specialist, 5–10 years in liver care) |
| | | 'Sometimes things like reconciling with family members, saying goodbye, saying I'm sorry.' (Clinician #25, Palliative Care Provider, 10–15 years in Palliative Care) |
| Social work | ► Help patients and family members navigate complex system<br>► Facilitate reconnections between patients and family members | 'The social workers are usually the ones who work with patients to fill out their advanced directives and power of attorney forms and just kind of all of that.' (Clinician #4, Clinical Psychologist) |
| | | 'Trying to find a family member sometimes. Sometimes they have names but they don't really know where they are, so we work with a social worker when patients have the goal of finding family members.' (Clinician #25, Palliative Provider, 10–15 years in Palliative Care) |
| Dietitian | ► Provide nutritional support | 'I do make some referrals to nutrition and for more in-depth counseling on low sodium diet or patients who have other dietary, special diets that they need to follow because of their illness.' (Clinician #4, Clinical Psychologist) |
| Physical therapist | ► Assist with physical concerns, fatigue, mobility, frailty | 'We have a dedicated physical therapist because frailty is also a very big issue in terms of advanced liver disease.' (Clinician #18, Gatroenterology and Transplant Hepatology, 3–5 years in liver care) |
| Pharmacist or pharmacy technician | ► Help avoid drug interactions and adverse events, patient education, improve medication adherence | 'I feel that pharmacists do definitely help out quite a bit even with patient education [and] direct management of medications. You know I…help out with drug interaction questions and even just a matter of like, this patient's running out of his immunosuppressants and he's a liver transplant patient can you please get these out [as soon as possible]. And I'm involved with some fatty liver treatment in the sense of using some of the weight management medications and reviewing those for appropriateness in the patients.' (Clinician #14, Clinical Pharmacy Specialist, 5–10 years in liver care) |
| Case manager or care coordinator | ► Point of contact for patients and facilitates access to services<br>► May include nurse coordinator, nurse case manager. | 'Somebody who sort of fills in the blank and answers questions and available for the patient when they need the person.' (Clinician #17, Hepatology Physician, 15–20 years in liver care) |

Previous scholarship has referred to this as the transition model of care in which a patient receives aggressive medical care until health decline necessitates transition to hospice and then death.[26] The synchronous care model is consistent with our previously described conceptual model of integrated AdvLD care.[8] Our synchronous care model resembles the trajectory model of care that was identified in previous scholarship.[26] In the synchronous care model, participants described early integration of a broader understanding of palliative and supportive care and emphasised the importance of education, prognostic awareness and advance care conversations that occurred in parallel with curative care. In the synchronous care model, a patient with AdvLD could be evaluated for transplant, have palliative care consultations and receive psychosocial and nutrition counselling concurrently.[8]

Implementation of a synchronous care model of integrated AdvLD care requires a multidisciplinary team with clear roles and active facilitators in place to promote teamwork and coordination. Participants in the current study identified several facilitators including colocation of the multidisciplinary team or regular multidisciplinary

case conferences, both of which can promote formal and informal conversations that benefit patient care. These facilitators can promote team convergence regarding individual and shared roles, responsibilities and collaboration.[27] When team convergence is achieved, a teamwork shared mental model emerges that can improve the synchronous efforts of the multidisciplinary, integrated AdvLD team.[28 29] In contrast, the sequential transitions model promotes individual mental models of how AdvLD is integrated and a shared mental model of how different professionals function within their roles, but leaves a barren model of teamwork across the sequential transitions. When describing the sequential transitions model, participants do endorse a multidisciplinary approach. However, those envisioning a synchronous care model often provide a richer array of disciplinary roles and functions (see table 3) for supportive and palliative care tasks.

Prior research details why the sequential transitions model persists. Clinicians, especially those affiliated with transplant services, may hold overly optimistic attitudes that hinder recommendations for nonaggressive (supportive and palliative) treatment options.[30] Discussions of death are often used to motivate behaviour change for aggressive therapy rather than encourage advance care planning and proactive symptom management.[11 30] As a consequence, advanced care planning that occurs earlier in the disease course in outpatient (non-crisis) settings is recommended.[12 30] Coupling supportive care (symptom management, psychosocial and caregiver support) with earlier prognosis and advanced care discussions has also been recommended[8 31] and is consistent with the synchronous model of integrated AdvLD care. Adoption of the multidisciplinary team and teamwork mindset and facilitators described by study participants is key to implementation of the synchronous model.

This study has limitations. We recruited clinicians from three VA health systems which limits the external validity of findings beyond similar VA sites. The VA patient population is mostly men and all patients have served in the United States Armed Forces. We sampled clinicians who typically provide liver disease care and may have skewed perspectives towards specialty care context. While potential biases exist in all research, our approach to data collection, analysis, and reporting was rigorous. Non-clinician interviewers conducted interviews and analysed data, thereby reducing bias in the research. Data were coded by four individuals who met frequently to discuss codes and enhance reliability. Finally, coding and emerging themes were discussed among members of a multidisciplinary research team.

In conclusion, clinicians who treat patients with AdvLD endorsed an approach that integrates curative and supportive care and advance care planning using multidisciplinary teams. However, clinicians' mental models of integrated AdvLD care differed based on the timing and conceptualisation of supportive and palliative care. A synchronous approach that integrates earlier supportive and advance care planning with curative care is favoured but tenuous without adoption of key facilitators of multidisciplinary teamwork, communication and coordination. An additional promotor of a synchronous model is training on the communication skills, scripts and tools for identifying patients' priorities. Patient's health priorities (specific, realistic outcome goals and care preferences) are the foundation for multidisciplinary treatment planning and referrals within an integrated, patient-centred model of care.[8] Future research should focus on developing clinically-pragmatic approaches to identify priorities and align AdvLD treatment recommendations to achieve patient priorities.[9] Additional future research may involve developing and testing an integrated care approach informed by the synchronous care model.

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