



Liver Transplant

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End Stage Liver Disease and Transplant: General Information

A liver transplant is:

- surgery that removes a patient's diseased liver and replaces it with:
 - a healthy liver (from a deceased donor).
 - part of a healthy liver (from a live donor).

The liver is the largest organ in the body and it:

- removes bacteria and toxins from the blood.
- prevents infection.
- regulates immune responses.
- processes nutrients, medications, and hormones.
- produces bile, which helps the body absorb fats, cholesterol and fat-soluble vitamins.
- makes proteins that help the blood clot.

A person may need a liver transplant if they have:

- acute alcoholic hepatitis (AAH)
- fulminant (or acute) liver failure
- cirrhosis

A. Acute Alcoholic Hepatitis (AAH)

AAH is when drinking alcohol destroys liver cells and causes the liver to swell.

- 35% of heavy drinkers (5 drinks a day for men, 4 drinks a day for women) have AAH.
- Patients with AAH can:
 - recover without a transplant.
 - receive a liver transplant.
 - die.

Symptoms of AAH are:

- fever
- jaundice
- nausea
- vomiting
- belly pain and tenderness
- fatigue
- weakness

B. Fulminant (or Acute) Liver Failure

Fulminant (or acute) liver failure is:

- When the liver stops working very quickly, usually with no past liver problems.
- Fulminant liver failure is not as common as chronic liver failure. Chronic liver failure is slow and over time the liver stops working.

Fulminant liver failure is caused by:

- acetaminophen (Tylenol) overdose
- prescription medications and herbal supplements
- hepatitis and other viruses
- toxins (from like poisonous mushrooms)
- autoimmune disease
- blood clot that stops blood from going to the liver
- rare metabolic diseases
- cancer
- shock

Symptoms of fulminant liver failure are:

- yellow skin and eyeballs (jaundice)
- pain in upper right abdomen
- abdominal swelling
- nausea
- vomiting

- general sense of feeling not-well
- disorientation or confusion
- sleepiness

Fulminant Liver Failure is very serious and requires hospitalization. It can cause:

- cerebral edema (too much fluid in the brain)
- infection
- bleeding and bleeding disorders
- death

Patients with fulminant liver failure might:

- heal.
- need a transplant to live.
- die.

C. Cirrhosis (permanent liver scarring) is the most common cause for liver transplant and is caused by:

- alcohol-related liver disease
- nonalcoholic fatty liver disease
- hepatitis B and/or C
- genetic diseases, like hemochromatosis and Wilson's disease
- cystic fibrosis
- alpha-R antitrypsin deficiency
- diseases that affect bile ducts (tubes that carry bile away from the liver), like primary biliary cirrhosis, primary sclerosing cholangitis, and biliary atresia
 - Biliary atresia is the most common reason for liver transplant in children

When the liver stops working, other parts of the body stop working, leading to **End-Stage Liver Disease**.

Common symptoms of End-Stage Liver Disease are:

- fatigue, feeling lethargic
- not sleeping well
- yellow, green, or gray skin and eyes (jaundice)
- weight loss (including loss of muscle)
- belly pain (usually right side, under the ribs)
- swelling in the belly (ascites)
- swelling in the legs or hands (edema)
- bruising easily

- nausea, vomiting, constipation, diarrhea
- Esophageal or gastric varices (enlarged veins connecting the stomach and throat that can burst and cause the patient to vomit blood)
- Hepatic Encephalopathy (poor brain function caused by liver disease)

D. Treatment Options for Patients with Liver Disease or Failure

Patients with end-stage liver disease or liver failure may need a liver transplant. A liver transplant can be received from a deceased (dead) donor or a living donor.

Liver Transplant Waitlist

The liver transplant waitlist uses the Model for End-stage Liver Disease (MELD-Na) score to determine the order in which patients receive a transplant. A MELD-Na is a score for patients on the liver transplant waitlist. The score (6 - 40+) shows how severe the liver disease is and how long the patient can live without a new liver. A higher score means the disease is more severe and the chance of survival without a new liver is lower. The score is based on 4 blood tests:

- [INR \(internal normalized ratio\)](#)¹ shows if the liver is making proteins needed for blood to clot
- [Creatinine](#)² shows how well the kidneys are working
- [Bilirubin](#)³ shows how well the liver is removing bile
- [Serum sodium](#)⁴ shows how well the body is balancing fluids

MELD score can change, so patients need frequent blood tests. MELD score calculator: <https://optn.transplant.hrsa.gov/resources/allocation-calculators/meld-calculator/>⁵

When a patient has a MELD score of 15, they might become “active” on the liver transplant waiting list. Their MELD score affects their place on the waiting list.

All transplant patients are listed in a national donor computer system, managed by the United Network for Organ Sharing (UNOS). They are matched to donor livers according to:

- blood type (O, A, B, or AB)
- body size, and
- severity of disease

When a liver is available, the patient with the highest MELD score (who also matches blood type and body size) receives it.

Ask your transplant team about **increased-risk donors**.

¹ <https://www.upmc.com/health-library/article?hwid=hw203083&locale=en-us#hw203086>

² <https://www.upmc.com/health-library/article?hwid=hw4322>

³ <https://www.upmc.com/health-library/article?hwid=hw3474&locale=en-us>

⁴ <https://www.upmc.com/health-library/article?hwid=hw203418>

⁵ <https://optn.transplant.hrsa.gov/resources/allocation-calculators/meld-calculator/>

- Patients who accept organs from increased-risk donors usually wait less time for an organ.
- An increased-risk donor is a deceased donor with higher risk of spreading one of the following undiagnosed diseases to a transplant patient (Abara et al., 2019):
 - human immunodeficiency virus (HIV),
 - hepatitis B, or
 - hepatitis C (HCV).
- Organs from increased-risk donors are not lower quality.

Living Donors

There are not enough deceased donor livers available for all the people waiting for liver transplant. How long a patient waits depends on their health and the location of their transplant center. No one can predict (or control) when a deceased donor liver will be available. Deceased donors must die before their liver is available. This is a frustrating, stressful, and discouraging time for patients and their caregivers.

Because a healthy liver can regenerate (regrow), living liver donation is also possible. First, a person must volunteer to be a living donor. Then, the patient must meet medical criteria to receive a living donor liver. Patients who are eligible for a living donor usually wait less time for a liver transplant. Ask your transplant team about living liver donation.

Before Liver Transplant: Caregiver Responsibilities

There are a lot of steps before a liver transplant. This is usually an overwhelming time for patients and caregivers.

The patient must:

- choose a transplant center,
- receive transplant education,
- complete the evaluation process,
- and, if approved, be listed for transplant.

To receive a liver transplant, the patient must complete an evaluation with the transplant team. This team can include:

- liver doctor (hepatologist),
- transplant surgeon,
- nurse coordinator,
- social worker,
- psychologist,
- psychiatrist,
- pharmacist,
- dietician, and

- financial coordinator.

Evaluation includes many appointments and tests to evaluate the patient’s liver and general health. The treatment team reviews test results to decide if the patient is eligible for transplant. If the patient is eligible, they are placed on the transplant waitlist.

While waiting for transplant, patients have frequent appointments (hepatologist, hospital, transplant center) to manage symptoms of End Stage Liver Disease.

Common Treatments to relieve symptoms of ESLD	
Paracentesis	Providers in a hospital use a hollow needle to drain fluid from a patient's abdomen. Some patients must do this 1 or 2 times per week to treat ascites.
Lactulose, Xifaxin	Medicine to treat Hepatic encephalopathy (HE). It can cause severe diarrhea and stomach cramping.
High protein diet	Diet to help with muscle loss.
TIPS	Outpatient surgery to put a stent in the liver, to treat uncontrollable ascites and variceal.
Transarterial chemoembolization (TACE)	When a patient receives chemotherapy and embolization to treat hepatocellular carcinoma.
Vericeal banding	When a provider puts a "band" around an enlarged or ruptured vein in the esophagus to stop blood leaking from blood vessels in the throat (varices).

Patients with cirrhosis also must be monitored for **Hepatic Encephalopathy (HE)**. HE is when a damaged liver cannot remove toxins from the body. The toxins damage the patient’s brain and cause mental and physical symptoms like:

- forgetfulness,
- mild confusion (not knowing who or where they are),
- slowed thinking and processing,
- poor judgement,
- feeling on edge or overly excitable,
- disorientation,
- changes to behavior or personality,
- changes to sleep pattern (staying awake at night and sleeping during the day),
- musty or sweet odor on breath,
- loss of small hand movements,
- shaking of hands or arms,
- slurred speech, and
- slowed or sluggish movement.

Symptoms depend on how damaged the patient’s liver is and how well it removes toxins from the body. **If the patient shows symptoms of HE, contact your hepatologist or transplant center immediately.**

Often, we can stop or control HE with medication that increases bowel movements (to remove toxins from the body). Sometimes, patients must be hospitalized to manage ammonia levels in their body.

While the patient is waiting for a liver transplant, neither of you can drink alcohol. The transplant center may give random drug tests to make sure you and the patient are [sober](#)⁶.

Supporting the Patient

As a caregiver, you can help the patient navigate this overwhelming process. You can:

- learn about the patient's diagnosis (there are many reasons they may need a transplant).
- go to the evaluation and follow-up appointments with the patient.
- take notes and ask questions during the evaluation and follow-up appointments.
- pack lunches and snacks to get through the full day of evaluation appointments.
- help the patient follow recommendations from the transplant team.
- work with the transplant team's financial counselor and social worker to make sure the patient has insurance for treatment and access to medication.
- help the patient follow good health habits.
- listen to the patient.
- offer comfort and encouragement to the patient.

The waiting period before transplant can be stressful. Ask the transplant social worker for support. While waiting for transplant, many patients experience:

- worsening health,
- anxiety,
- depression,
- panic, and
- lower quality of life.

As a caregiver, [you must take care of yourself during this time](#)⁶. You might feel:

- fatigue,
- anxiety, and
- depression.

Special Caregiving Considerations for Patients with AAH

Many caregivers struggle with:

- seeing the patient quickly become very sick and hospitalized often.

⁶ <https://www.myast.org/caregiver-toolkit/self-care-for-the-caregiver>

- accepting the patient's alcohol use.
- learning about liver transplant and care during recovery.

As a caregiver, you might feel:

- shame or guilt, because AAH was caused by alcohol.
- self-blame or anger for not recognizing the “signs” of alcohol abuse.
- depressed and burdened by caring for a patient with alcohol abuse.
- angry with the patient.
- stigmatized or judged.
- irritable or sad because of changes in the patient's personality.
- resentful for having to change your lifestyle. You must remove all alcohol from the patient's home. Usually, you must stop drinking alcohol when you are a caregiver.

[Remember to care for yourself](#) if you experience these emotions⁷.

- Ask for help and accept it when offered.
- Share responsibilities with friends and family.
- Consider getting support for yourself:
 - therapy.
 - Al-Anon (support group if you have a loved one with alcoholism).
 - support groups for caregivers.
- Take breaks.

During the Transplant: Caregiver Responsibilities

When the transplant team accepts a liver for the patient, they will:

- tell the patient (if they are already at the hospital). Some patients with severe liver disease may already be in the hospital. The transplant team will tell them a liver is available and call their caregiver or family.
- call the patient and tell them to come to the hospital (if they are at home). This can happen any time during the day or night. The team will call you if they need help contacting the patient.
- not give information about the donor to the patient, caregivers, or family (due to federal law).

When the patient is admitted to the hospital they will:

- have blood tests.
- not be able to eat or drink before surgery (NPO, or nothing by mouth).
- meet with the intake nurse.
- sign consents before starting surgical preparation.
- have an X-Ray.

⁷ <https://www.myast.org/caregiver-toolkit/self-care-for-the-caregiver>

- go to different places in the hospital for testing and surgery preparation. Staff will update you as they can.
- receive anesthesia 1-1.5 hours before surgery. They will not be awake during the surgery or feel any pain.
- receive a breathing tube. Intubation is a normal part of surgery.

Important! Sometimes, transplant surgery is canceled because the organ might not be a good match for the patient. This is disappointing, but it means the patient is at the top of the waitlist. They might get another call soon.

Liver surgery can take many hours.

- The surgeon might tell you how long surgery could take. This is an estimate and can change.
- The medical team will update you as often as they can.
- The surgeon will talk with you after surgery, while the patient is in the Intensive Care Unit (ICU).
- You might wait several hours to see the patient, even after surgery. It's a good time to rest and eat. Give your phone number to the nurse, so they can call you if needed.

When you see the patient, be prepared. They might be confused or disoriented. They might have:

- a large IV catheter in the side of their neck,
- an IV in their arm,
- a breathing tube, and
- tubes in their belly (removed the first week after surgery).

After surgery you will support the patient. Many different providers will go in the patient's room throughout the day. You should spend most of the day at the hospital, so you can:

- meet the providers,
- learn about the different teams,
- know the patient's daily schedule,
- hear all the updates, and
- ask questions.
- attend educational sessions about post-transplant care.
- You will learn how to care for the patient at home (wound care, medication management, how to monitor for infection, etc.).

Caregiving for a liver transplant patient is a big job. You must also [take care of yourself](#)⁸.

- Go home and rest. Do not sleep at the hospital.

⁸ <https://www.myast.org/caregiver-toolkit/self-care-for-the-caregiver>

- Trust the hospital staff to care for your patient and call you with any needs.
- Talk to the transplant social worker if you are feeling overwhelmed.
- Talk about how you are feeling.
- Ask for help. Don't try to do everything alone.

After Liver Transplant: Caregiver Responsibilities

Taking care of a new liver is a big job.

After discharge from the hospital, the patient will need a lot of help. You will take care of the patient at home until they improve enough to take care of themselves. You will:

- learn about the new medication the patient must take (use, dosage, and side effects),
 - help the patient take their medications **exactly** as prescribed,
 - use a pill box to help the patient organize their medication,
 - look for side effects (hand tremors, shakiness, etc.),
- track blood pressure, blood sugar, temperature, weight, and fluid intake (ask for tracking documents),
- take the patient to clinic and lab appointments.
 - Appointments are weekly to start, to make sure immunosuppression medication is working.
 - Ask your treatment center when the patient can drive again after surgery.
- care for the patient's wound.
 - Staples will stay in for several weeks after surgery.
 - Help the patient clean the incision with antibacterial soap.
 - If needed, a home health nurse might be able to help.
- prepare meals,
- complete (or ask for help with) household chores,
- help the patient with daily living and hygiene activities, and
- help the patient report concerns or symptoms.
- monitor the patient's mental health.

Recovery can take time. Talk often with the transplant team to monitor the patient's recovery. Make a list of all appointments, procedures, and medication changes to help you, the patient, and the transplant team.

Post-Transplant Medications

After surgery, the transplant team will prescribe many medications. Some will have very specific instructions. For example:

- Some immunosuppressant medication must be taken 12 hours apart.
- Other medication cannot be taken before laboratory blood draws.

If the patient does not take their medication correctly, their body can reject the new organ. This means that their immune system will attack the new organ because their body doesn't recognize it. Rejection is most common for transplant patients who miss medications.

As a caregiver, you must:

- help the patient take medication **exactly** when and how it is prescribed.
- order refills.
- make sure the patient takes the correct dose (doses change often).
- help the patient organize their medications.

Ask the transplant pharmacist or nurse to help you organize medications before the patient is discharged from the hospital. They might recommend you use a pill box.

Lab and Clinic Appointments

You will help the patient go to all lab and clinic appointments to monitor:

- the patient's general health.
- how the new organ is working.
- early signs of rejection.
- signs of infection.
- how the patient's body is handling anti-rejection medication.
- talk about any changes the patient should make.
- pain. Tell the transplant team immediately if the patient has pain. Pain over the incision area can be a sign of rejection.

Other caregiver responsibilities

For the first 4-6 weeks (at least), you will need to:

- drive the patient to their clinic appointments,
- prepare meals,
- lift anything 10 pounds or more,
- and help the patient with other lifestyle changes needed to take care of their new organ.

Call the transplant center immediately if the patient has a fever or acts out of character.

Being a heart transplant caregiver is rewarding and challenging. [You must take care of yourself⁹](#).

- Remember to ask for help, to avoid caregiver burnout.
- Attend support groups for caregivers.
- Remember to take care of your own health.
- Go to your scheduled medical appointments.
- Don't stop taking your prescription medicine.

Questions to Ask Your Liver Transplant Center

- What are the risks and benefits of receiving a liver transplant?
- What is the average wait time for a liver transplant at this center?
- What is the average MELD score of patients who receive a transplant at this center?
- What are the risks and benefits of accepting an organ from an increased risk donor?
- Does your center accept living liver donations?

⁹ <https://www.myast.org/caregiver-toolkit/self-care-for-the-caregiver>

- What are the requirements for alcohol, drug, and tobacco use for liver transplant patients?
- What are the requirements for alcohol, drug, and tobacco use for caregivers?
- How long will I stay with the patient after liver transplant surgery?
- How long will the patient need 24/7 care after a liver transplant?
- Can the patient be listed at more than one transplant center?
- Does the patient qualify for community long term care services through the Medicaid Waiver?
- Do we have to move to be closer to this transplant center?
- If yes, are there options that are cheaper than hotels, like Airbnbs?
- Should the patient have an emergency device (like Lifeline) before or after transplant?

Liver Transplant Caregivers' Perspectives: Laurie S.

Every Liver Transplant Caregiver should know: “Every caregiver needs to learn about caregiver responsibilities/expectations and about the disease of the patient for whom they are caring. Research and learn as much as you can about the liver. How it works, how it works alongside other organs, what happens to body systems as the liver begins to fail. Information is power. Understand what a MELD score is and how it affects how your loved one gets put on the transplant list. Look up all the medications your loved one is taking. Help to make sure they are taking the medications as they are prescribed. When mental status is getting worse, memory problems happen. Try to understand how everything works together. Take notes between medical appointments so you can address your concerns in a complete way. Be as helpful to the different doctors as possible. If the endocrinologist asks for a list of times and blood sugars, do it! Become part of the medical team by advocating and representing your loved one the best way you can. If you can only do so much, then do that the best you can. If the more information you have, the better you feel, then study, learn, ask questions, be proactive. There came a point where my husband could not think or speak up for himself, his memory was shot, he needed someone to speak for him. That’s where I came in. Gradually the doctors would just talk to me because my husband just wasn’t able to tell them what was happening in a clear way. A big part of caregiving is being an advocate. Make sure every doctor and nurse working with your loved one knows you are in this 100%.”

As a caregiver I wish I would have known: “I wish I would have known to not take it personally. Liver patients are uniquely affected by deficits in mental cognition. Hepatic Encephalopathy is real and unless you are prepared for it, it can be devastating. I was taking care of my husband’s every need, including bringing him every meal to eat bedside. Even though I quit my job to take care of him and was doing the best job I could do, my husband would still yell at me, curse at me, tell me how selfish I was. At the beginning I didn’t understand what was happening. I took it personally and I cried a lot. Then I proactively read about what might be causing my husband’s awful behavior. He had hepatic encephalopathy, when toxins build up in the brain because they cannot be filtered correctly through the liver. This causes a change in the personality of the patient for the worse. I spoke to our liver doctor about it and my husband was put on a liquid medicine that helped flush out the extra toxins. The side effect was gastrointestinal problems, but my husband’s personality was much improved. Even though the medicine helped, it is very likely your loved one will still have times when they flare up. One day we were in the car and my husband was going off on me. I decided right then and there that I was going to immediately forgive him, because it wasn’t him. I would forgive him and

immediately move on. So, from that day forward any time he went off on me, I forgave him in my heart and then changed the subject immediately. Just doing that reframed our relationship and kept things moving forward in a positive way. Understanding how hepatic encephalopathy affects your loved one is crucial to your happiness as a caregiver. I understand that hurts when you're giving your all and getting rude and bad behavior back. In those dark moments, try to remember it isn't them, it's the disease, and move on."

The most difficult aspect of being a caregiver: "Take care of yourself! As it got closer to his transplant, my husband was in bed most of the time, especially the last two years waiting for his meld score to worsen. I couldn't go very far, so I found a hobby that worked within the limitations of taking care of him also. I decided to garden and plant. Those last two years our yard was fabulous! I needed the physical activity and it was very centering. I worked for an hour or so and then I'd go in and check on my husband, give him his meds, make him food etc. That really helped me through those last hard times.

Stay Optimistic! I cannot say enough about the power of positivity. Talk about what you are going to do AFTER the successful transplant. Set some goals. Ask your loved one to dream again. My husband had convinced himself he was not going to make it. I had to get serious about changing his negative thoughts. What would your loved one want to do when they get through this. Because they are going to be on the other side of this thing. Do they want to travel? Change of career? Find out what your loved one wants to do after you have won this battle. My husband's transplant was 4 years ago and he is about to do his first triathlon! While he was sick in bed, he made the goal of getting in shape after his transplant. He began training as soon as he felt up to it after surgery. He's finally ready to live that dream and I couldn't be more proud of him!"

The most rewarding aspect of being a caregiver was: "Give back! After the transplant, find a way to give back. My husband and I run/walk the Cooper River Bridge Run every year and we wear shirts advocating DonateLife and organ transplant awareness. Join a transplant support group. Some groups have patients pre- and post-transplant. Help other transplant patients and their caregivers with your unique perspective. My husband is very active in our hospital's transplant support group. He gets a lot from giving back."

I was most surprised as a caregiver by: "The absolute commitment it takes to be a caregiver surprised me. Caregiving became my job. I looked at it like that because I wanted to really give this thing my all. My husband is the father of our 5 sons and 6 grandchildren. We all need him to be in our lives! I knew caregiving would be intense but it can be and is all consuming. That is why, getting a hobby and doing things that are just for you is so important. Ask other loved ones or friends to give you an afternoon or day to yourself. To do whatever you want! That helps the caregiver, it helps the sick loved one because they see other people love them too and it helps the family and friends understand the scope of the situation."

Liver Transplant Caregivers' Perspectives: Diane C.

Every Liver Transplant Caregiver should know: "Walk your patient. Know the medications. What they look like, all the doses, names of them. Use a pill box. Use an alarm to remind you to take meds. Always thoroughly wash all fresh fruits and vegetables, even if you do not eat the skins. Never eat raw fruits and vegetables at restaurants. Inform all friends and family about cooking rules for transplant patients. Cleaning and cooking to temperature. Leftovers can only be heated once. After 3 days don't eat it. If eating out, clean anything the patient will touch.

Table, chairs, condiments, etc. Use to go cups. Take notes at all classes and appointments, refer to your notes. Make lists of questions for your next appointment, if you have any.”

As a caregiver I wish I would have known: “It will be hard to separate being the caregiver from being the wife. Make time together that is not caregiver time. It is easy to get caught up in the caregiver routine, so remind yourselves to just enjoy each other.”

The most difficult aspect of being a caregiver: “Know that someone else is grieving the loss of a loved one when your loved ones receive their liver transplant. It’ll be difficult to see the person you love in pain. Gratefully it is a short part of recovery! Sometimes you have to be the bad guy. It’s your job to keep them from doing things they shouldn’t. Like lifting or doing too much.”

The most rewarding aspect of being a caregiver was: “Watching your patient improve on a daily basis will be encouraging. Knowing you were a part of the process and the recovery. Be blessed to still have them with you!”

I was most surprised as a caregiver by “How quickly he felt better! When he came to his room from recovery, he had better color. His stamina increases continually.”

How I would recommend other caregivers to take care of themselves during this process by: “Educate yourself. Understand the process. Have a caregiver for yourself the first couple of weeks. This person can get meals for you or run errands if needed. Someone who you can lean on and bend their ear if necessary. To help you settle in after leaving the hospital. To be your friend. Know when you need a break and take it. Know if you need to step away from your patient. Some medications can alter their personalities. Leave the room, take a few yoga breaths and remind yourself it’s not really them and it’s temporary.”

Resources

- American Liver Foundation <https://liverfoundation.org/>
- American Liver Foundation Caregiver Resources: <https://liverfoundation.org/resource-center/caregiver-resources/>
- Substance Abuse Resources:
 - <https://unityrecovery.org/digital-recovery-meetings>
 - **12-Step Groups**
 - AA Online Meeting Directory: <https://aa-intergroup.org/directory.php>
 - AA – Online: http://12stepforums.net/alcoholics_anonymous_online_meeting.html
 - AA COVID-19 Informational Page: https://www.aa.org/assets/en_US/en_updatesoncoronavirus.pdf
 - AI-Anon – Online: http://12stepforums.net/alanon_family_group_online_meeting.html
 - IDAA: <https://www.idaa.org/>
 - NA Online Meetings “Addicts helping Addicts Recover”: <http://na-recovery.org/>
 - NA – Online: http://12stepforums.net/narcotics_anonymous_online_meeting.html

- NA COVID-19 Informational:
Page: https://www.na.org/admin/include/spaw2/uploads/pdf/Coronavirus_web_message_12Mar.pdf
- Online Recovery Group (ORG): <https://onlinerecoverygroup.org/schedule>
- Buddhism-Based Recovery: <https://recoverydharma.online/>
- Refuge Recovery: <https://refugerecovery.org/meetings?tsml-day=any&tsml-region=online-english>
- SMART Recovery: <https://smartrecovery.org/>
- LifeRing: <https://www.lifering.org/online-meetings>
- All Pathways: <https://unityrecovery.org/digital-recovery-meetings>

References

1. Abara WE, Collier MG, Moorman A, et al. Characteristics of Deceased Solid Organ Donors and Screening Results for Hepatitis B, C, and Human Immunodeficiency Viruses — United States, 2010–2017. MMWR Morb Mortal Wkly Rep 2019; 68:61–66. DOI: <http://dx.doi.org/10.15585/mmwr.mm6803a2>
2. Understanding the risk of transmission of HIV, hepatitis B, and hepatitis C from U.S. PHS increased risk donors. Available at: https://optn.transplant.hrsa.gov/media/2270/dtac_guidance_risks_201706.pdf.

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