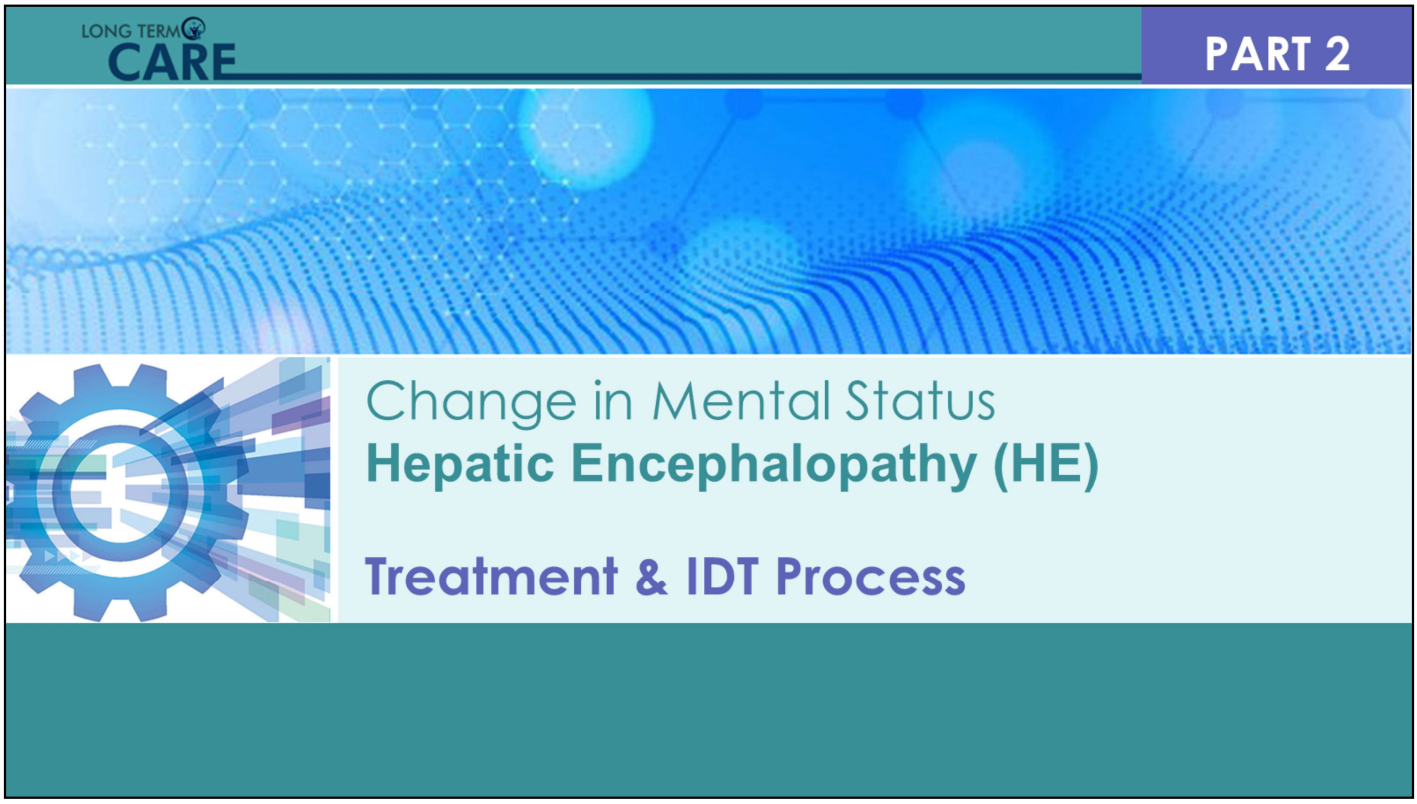
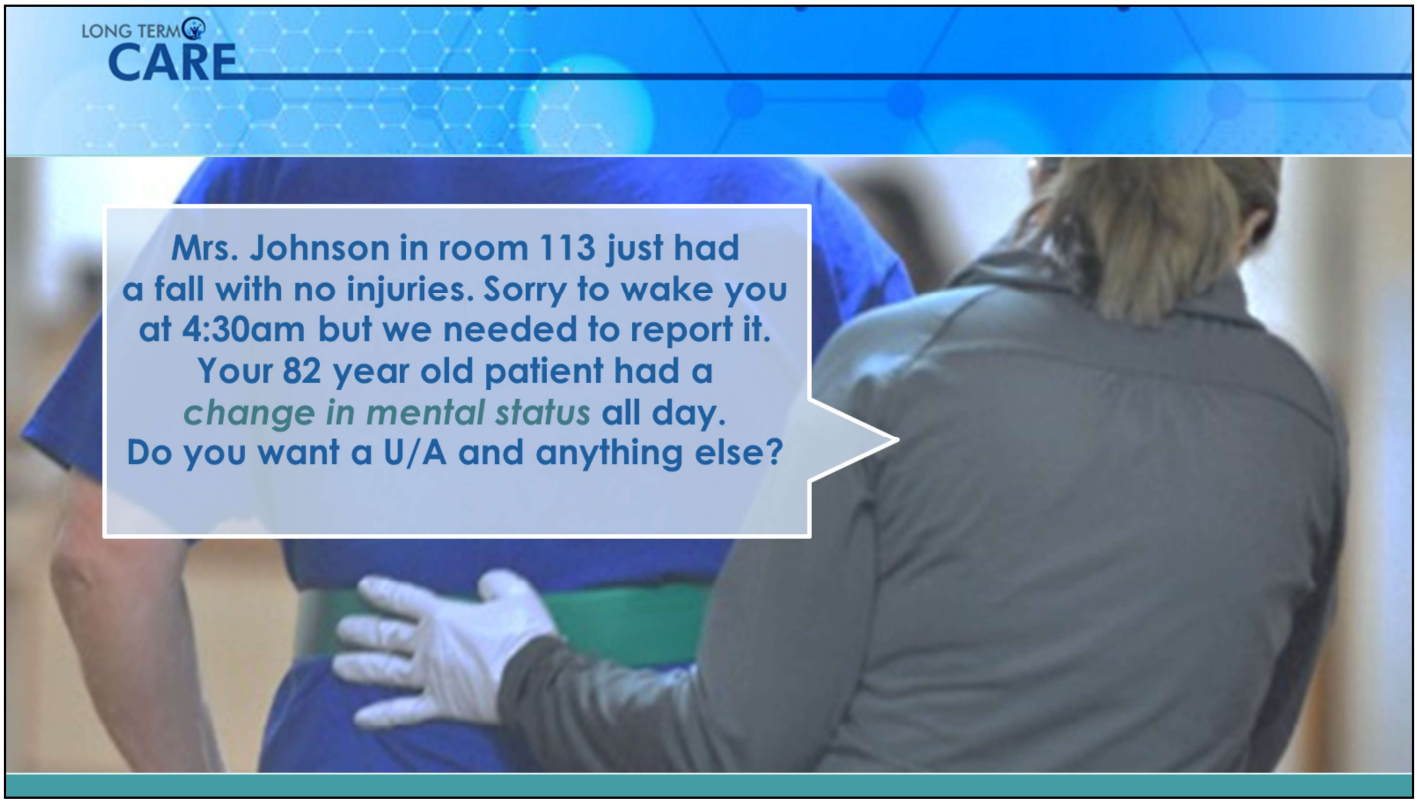


Facilitator Notes:

This is Part 2 of our 2 part series on Changes in Mental Status – Hepatic Encephalopathy.

This part covers in detail the treatments for HE as well as the roles and responsibilities for each member of the Interdisciplinary Team. This Part also quickly reviews the problem and diagnosis before diving into the details of treatment and IDT roles. As such this will aid your SNF, especially leaders, to best manage this critical problem.

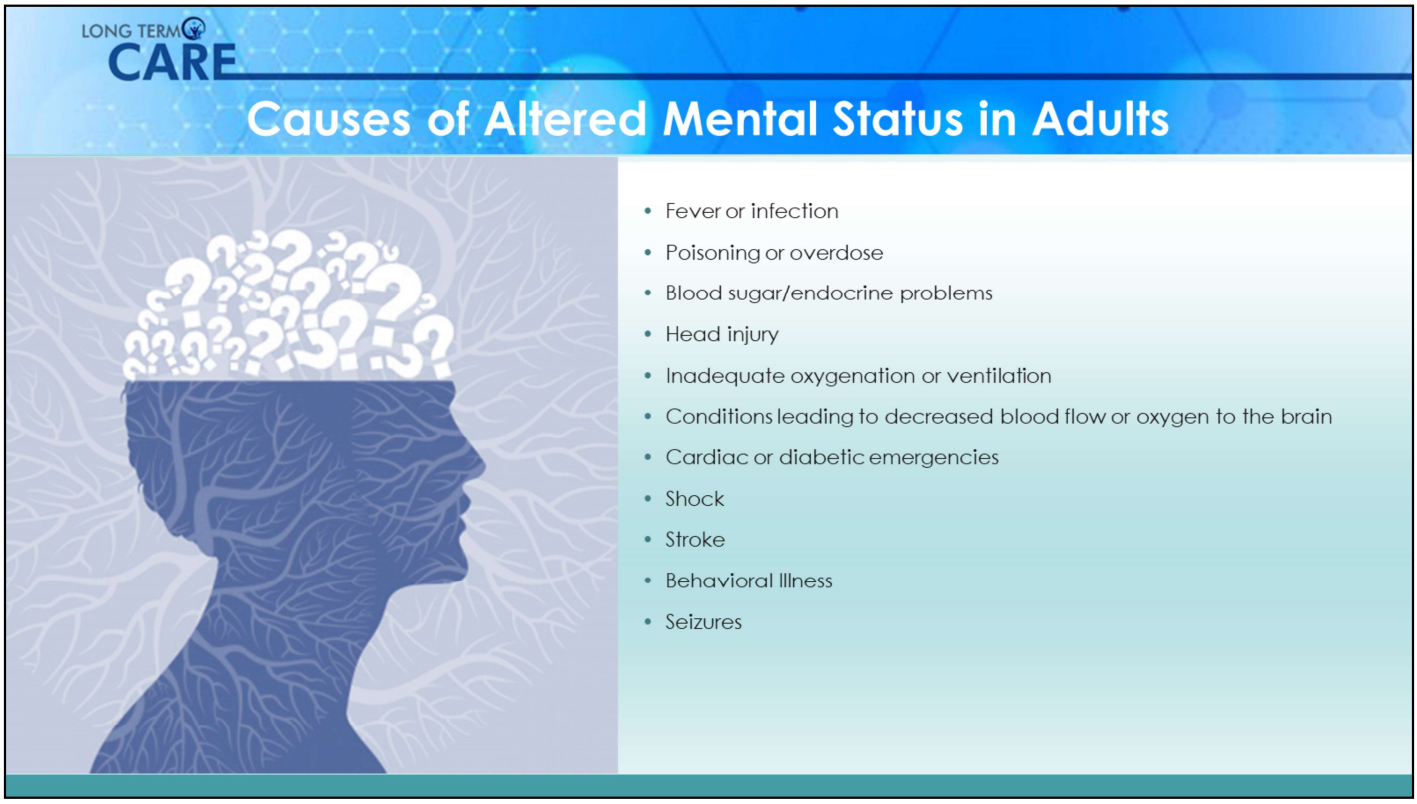


Facilitator Notes:

How often does this scenario happen ?…in most SNFs this is a weekly occurrence at least, if not more often.

And how often are we missing the real issue ?

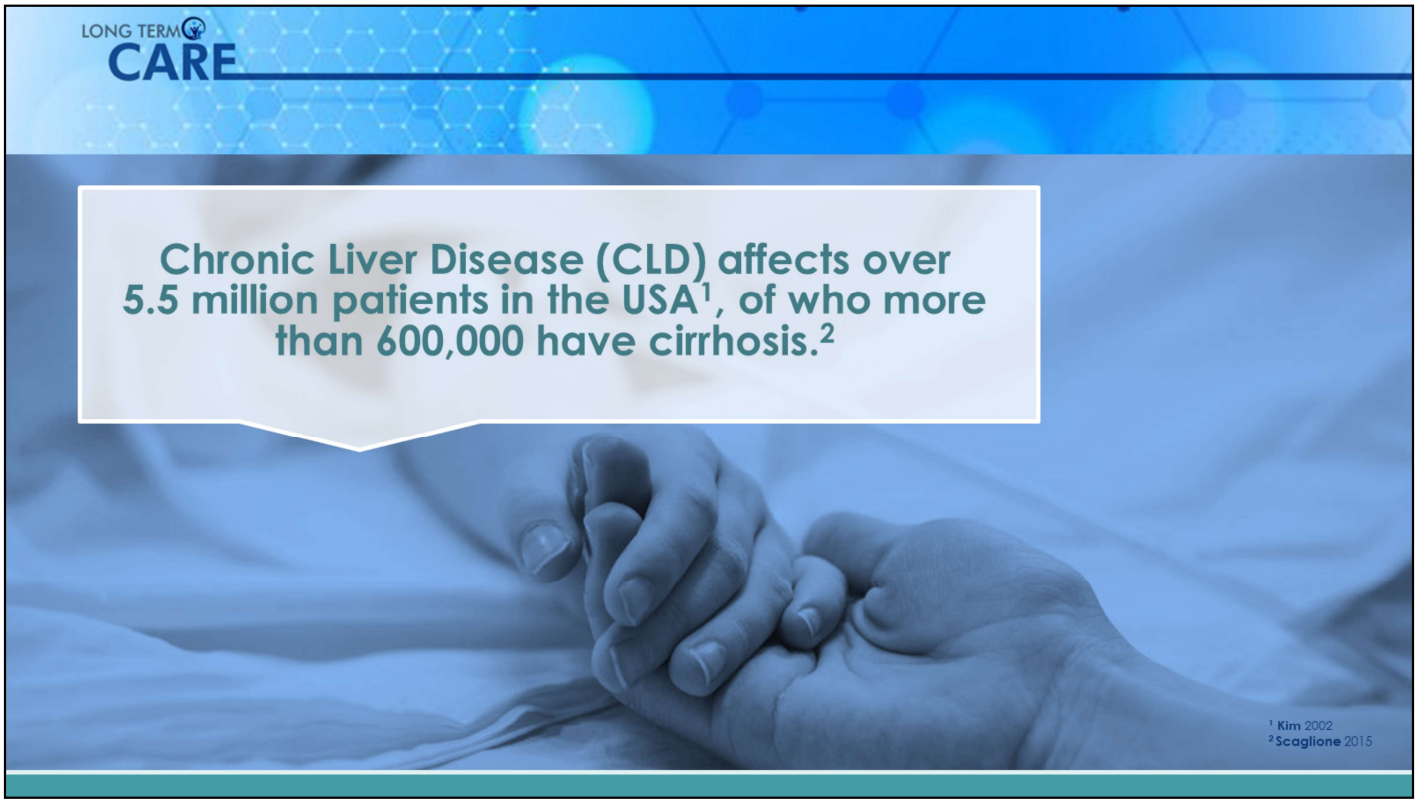
Let's take the next few minutes to review one possible explanation for a change in mental status…Hepatic Encephalopathy.



Facilitator Notes:

An infection e.g. UTI, is only one of the possible causes of changes in mental status, but there are of course many others to consider.

One of these is the buildup of toxic levels of serum ammonia in patients with chronic liver failure, which underlies hepatic encephalopathy (HE).



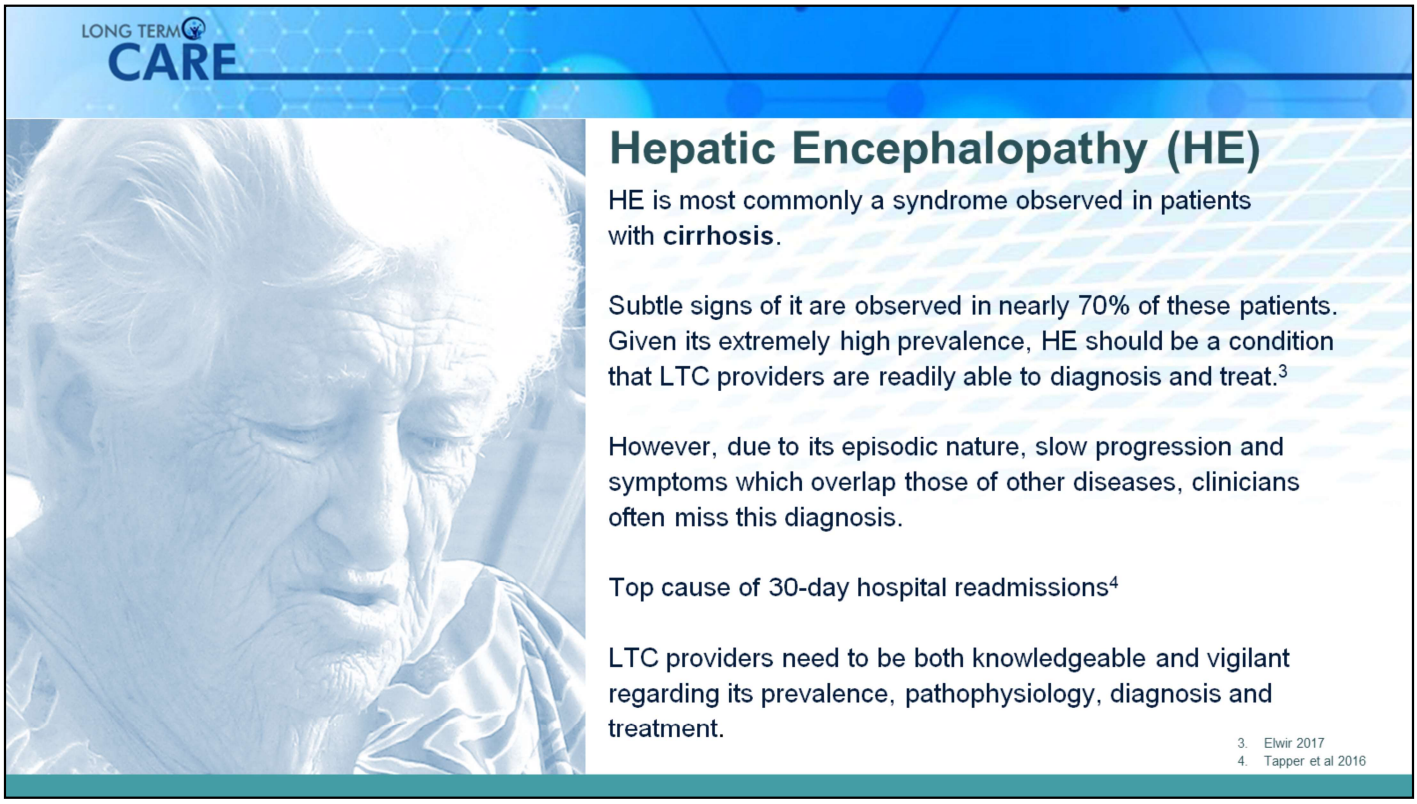
Facilitator Notes:

Hepatic Encephalopathy is a term that means brain disease, damage, or malfunction that comes from issues with one's Liver.

This results from chronic liver disease, which is especially prevalent in the US, including the serious progression of this disease to cirrhosis.

Cirrhosis is a late stage of scarring (fibrosis) of the liver caused by many forms of liver diseases and conditions, such as hepatitis and chronic alcoholism.

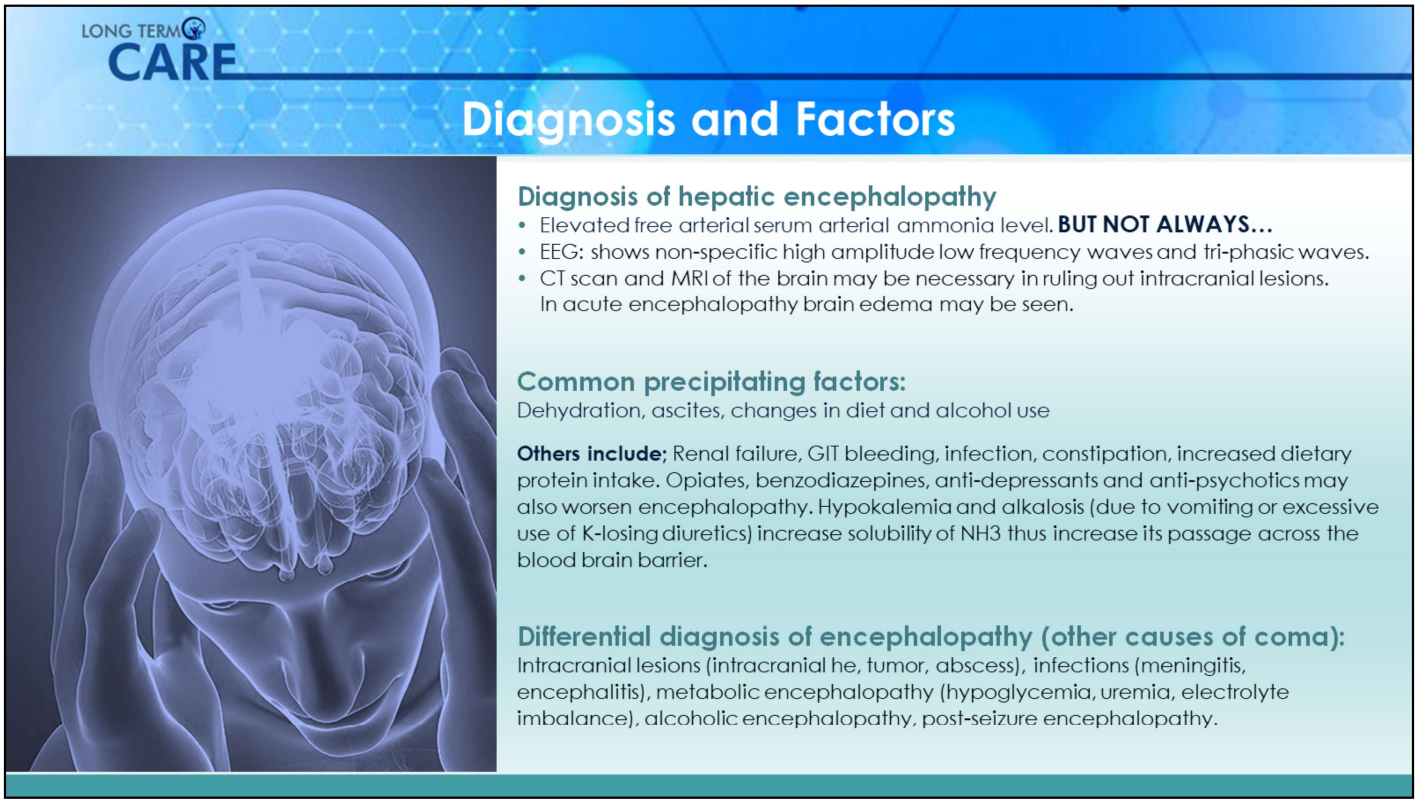
With so many affected many of these patients end up in our nursing homes.



Facilitator Notes:

A couple key points to remember about HE are as follows;

- HE is most commonly a syndrome observed in patients with **cirrhosis**.
- Subtle signs of it are observed in nearly 70% of these patients
- Due to its episodic nature, slow progression and symptoms which overlap those of other diseases, clinicians often miss this diagnosis
- Largest driver of 30-day hospital readmissions for cirrhosis patients
- LTC providers need to be both knowledgeable and vigilant when they observe cirrhosis patients exhibiting symptoms like a change in mental status



Facilitator Notes:

So, once you suspect that a patient with cirrhosis may be suffering from HE, how does one confirm the diagnosis?

As cited on the slide and listed below here are some tests that can be utilized:

- Blood test that shows elevated ammonia levels
- EEG that shows brain wave activity
- Scan of the brain that rules out others causes and may show brain swelling

Regarding ammonia levels it is important to keep in mind that the diagnosis of HE is a clinical one, once other causes for confusion or coma have been excluded; **no test fully diagnoses or excludes it**. Serum ammonia levels are elevated in the majority of people, but not all hyperammonaemia (high ammonia levels in the blood) is associated with encephalopathy.

The American Association for the Study of Liver Diseases / European Association for the Study of the Liver (AASLD / EASL) Guideline (2014) provides guidance on testing for ammonia levels some of which are highlighted below:

- A normal value calls for diagnostic reevaluation.
- High blood-ammonia levels alone do not add any diagnostic, staging, or prognostic value in HE patients with chronic liver disease. However, in case an ammonia level is checked in a patient with OHE and it is normal, the diagnosis of HE is in question. For ammonia-lowering drugs, repeated measurements of ammonia may be helpful to test the efficacy.
- There may be logistic challenges to accurately measure blood ammonia, which should be taken into consideration. Ammonia is reported either in venous, arterial blood, or plasma ammonia, so the relevant normal should be used.
- Multiple methods are available, but measurements should only be employed when laboratory standards allow for reliable analyses.

While diagnostic tests, of course, require a provider's order, it is beneficial for nursing staff and others to appreciate the process as a whole.

- EEG that shows brain wave activity
- Scan of the brain that rules out others causes and may show brain swelling

Common precipitating factors are dehydration, ascites, changes in diet, alcohol use, and others listed.

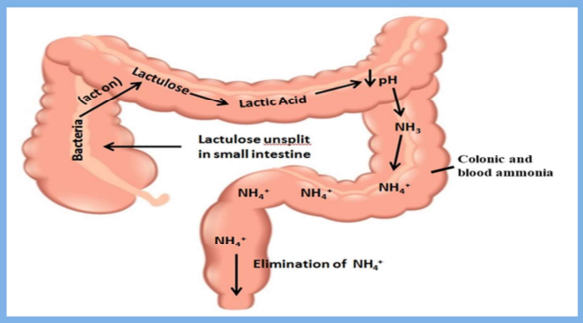
The AASLD/EASL Guidelines are a very credible source to build out a guide for your facility..

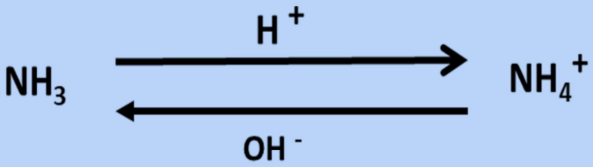
Facilitator Notes:

There are several treatment options for Hepatic Encephalopathy which can prevent mental status changes.

LONG TERM CARE

Mechanism of Action of Lactulose for OHE





- A non-absorbable disaccharide
- It produces osmosis of water — Diarrhea[5,6]
- It reduces pH of colonic content & thereby converts freely diffusible NH_4 into ammonium ions (NH_4^+), which cannot be absorbed and are therefore excreted[5,6]
- Lactulose reaches the colon unsplit. It is then converted by bacteria to organic acids and an acid stool results. This may also affect the ionization of ammonia in the colon and reduce its absorption.[5,6]
- The current AASLD/EASL guideline (2014) recommends rifaximin as an add-on to lactulose for prevention of recurrent episodes of HE after the second episode.[7]

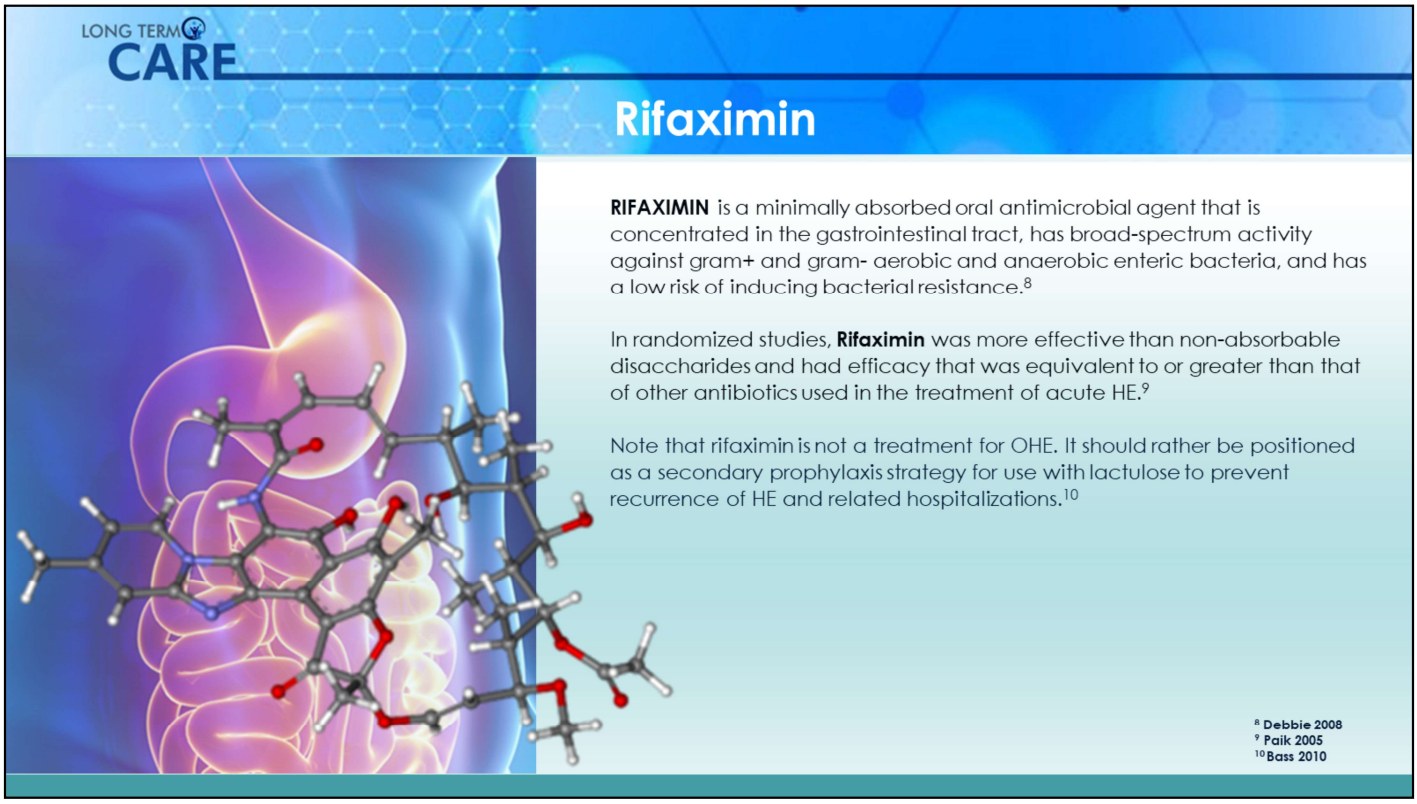
[5] Reena.
[6] Davidson's
[7] AASLD EASL 2014

Facilitator Notes:

Since the mental status change is due to toxins – getting them out of the body is critical. In this regard, a mainstay of the treatment for acute Overt HE is lactulose, which works by getting the gut flora to acidify the colon, leading to conversion of freely diffusable ammonia (NH_3) into ammonium ions (NH_4^+) which are not absorbable by the gut and are therefore excreted.

This excretion is enhanced by the laxative effect of lactulose, due to its lowering of osmotic pressure of the gut contents, thereby drawing water into it and inducing diarrhea.

To help prevent the recurrence of OHE it should be noted that the current (AASLD/EASL) guideline recommends combined lactulose plus rifaximin for prevention of HE after the second episode.[7]



Facilitator Notes:

Rifaximin works as a poorly absorbed antimicrobial agent that is thought to reduce ammonia production by eliminating ammonia-producing colonic bacteria.

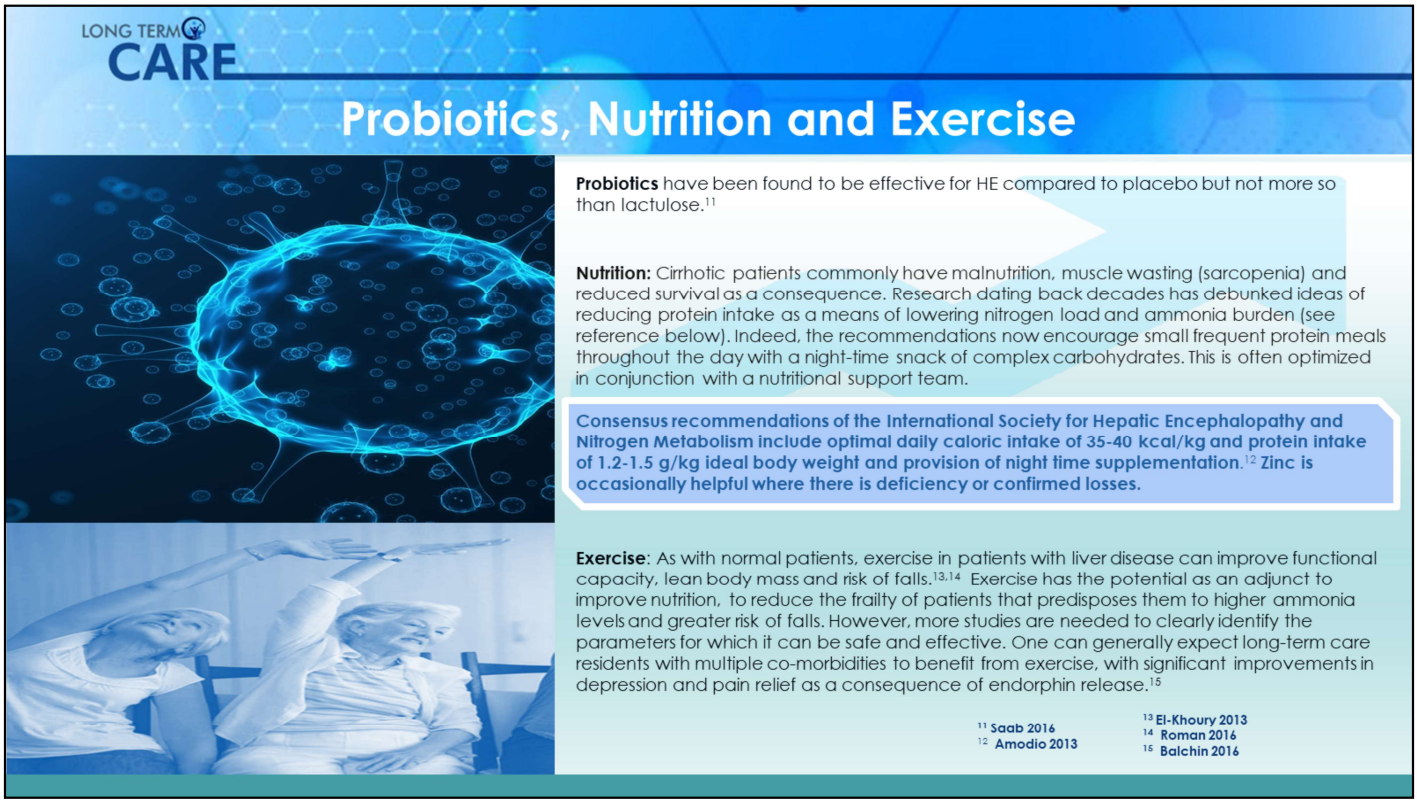
Because of this mechanism of action, rifaximin has been shown to be beneficial in combination with lactulose.

Remember rifaximin is not a treatment for acute OHE it should be positioned as a secondary prophylaxis strategy with lactulose to prevent recurrence HE and related hospitalizations[9]

Facilitator Notes:

This illustrates a typical treatment regimen for patients with HE – one with which nurses should be familiar, both from an administration standpoint as well as from the standpoint of educating patients on the importance of these medications together.

One of the major reasons for patient non-adherence to treatments is their lack of appreciation for their benefits. This understanding can go a long way toward maintaining treatment adherence.



Facilitator Notes:

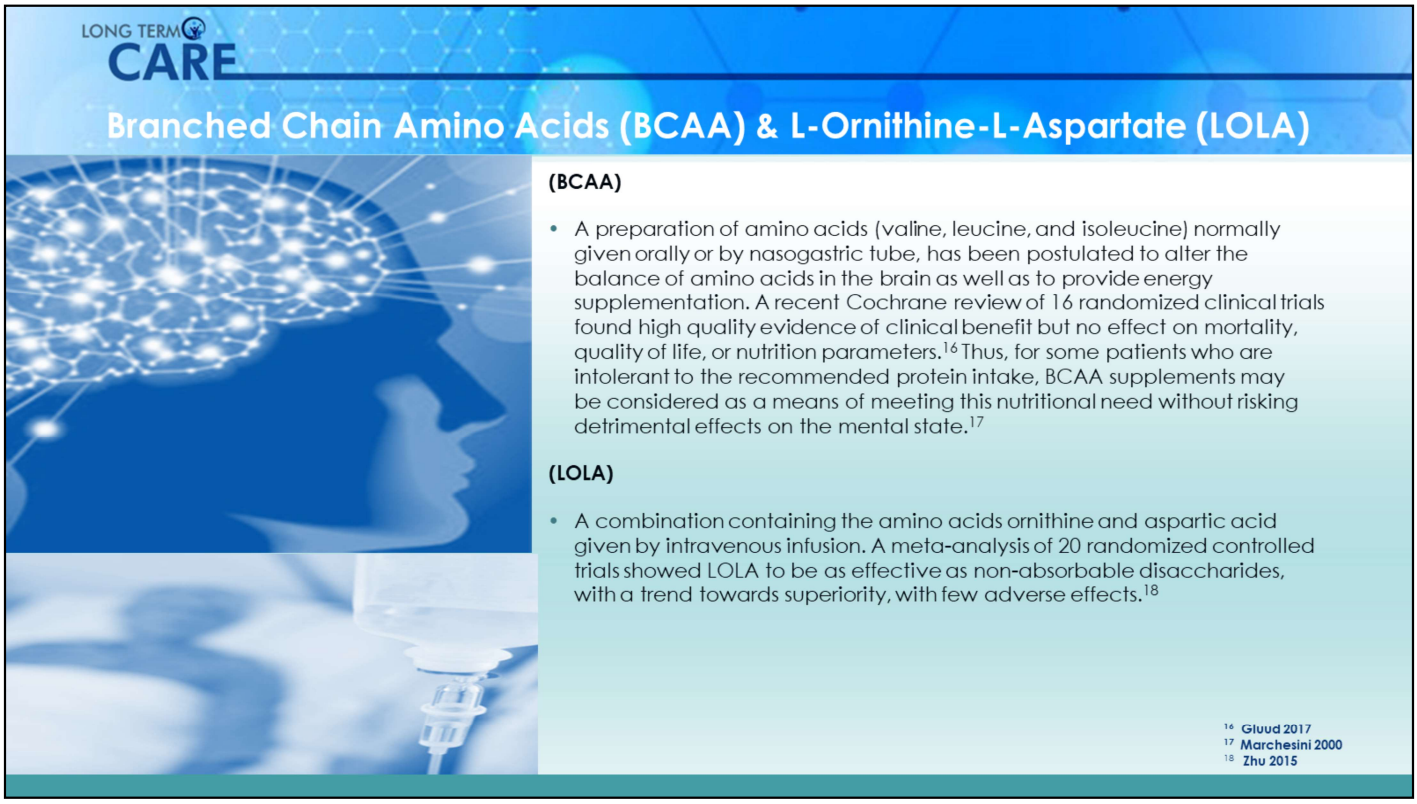
Probiotics, nutrition and exercise may be helpful in the management of HE but it should be noted that they are not listed as a recommended treatment in the current (AASLD/EASL) guidelines on the treatment of HE

Again with a focus on the gut – probiotics may be helpful in the management of HE, but are still not as effective as other treatments.

Perhaps the most significant role for Probiotics in LTC is their use after a course of **antibiotics** in order to restore some of the healthy bacteria in the intestines that may have been killed. As such, probiotics are often ordered with antibiotics and continued for some time after the antibiotics are completed.

Nutrition is a key component to assure against malnutrition and limit the production of ammonium through a diet with the right balance of calories and protein.

As is true for most conditions, **exercise** improves the health of patients with HE, so keeping our older adults with HE active has major benefits, including reducing ammonia levels, frailty, risk of falls and mood.

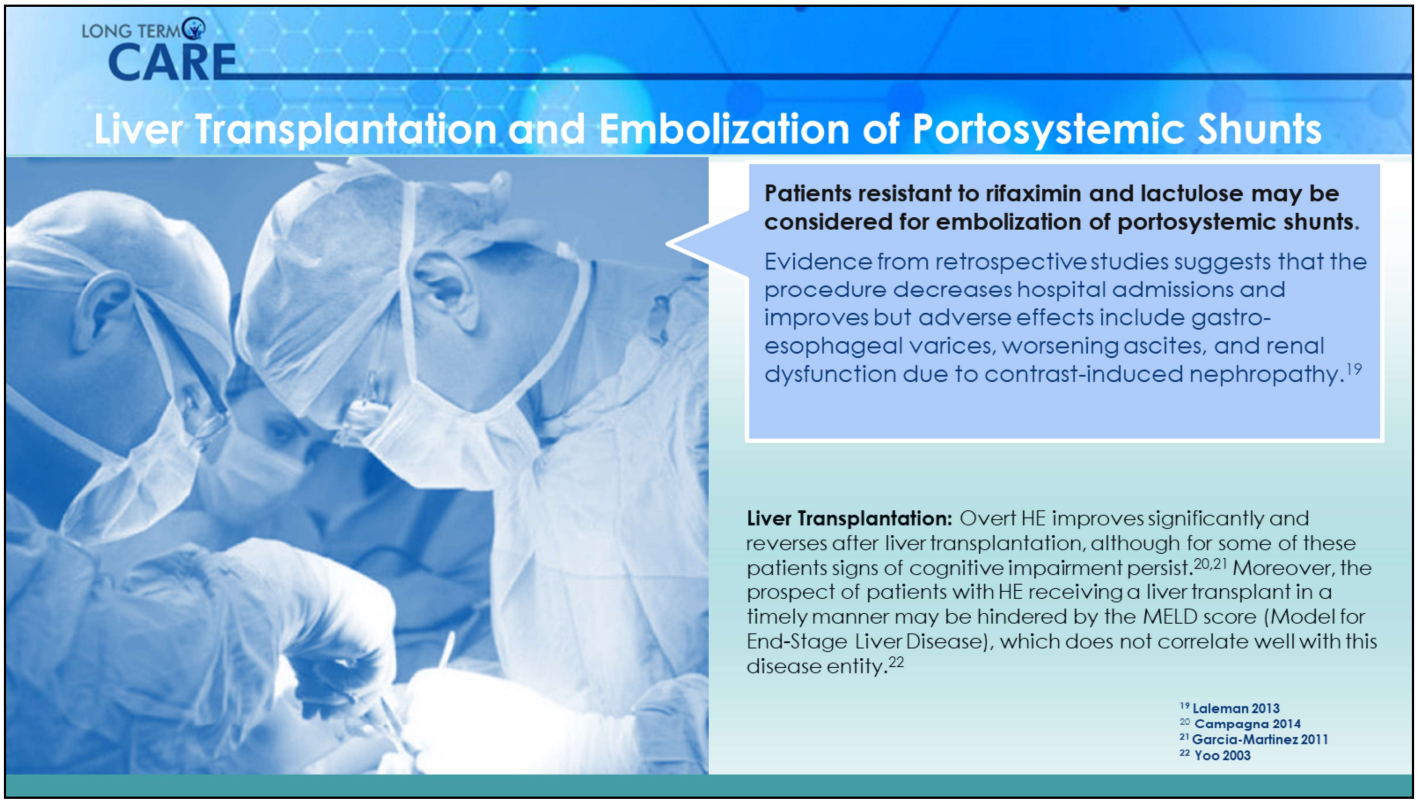


Facilitator Notes:

If adequate amounts of proteins can not be obtained through a diet they can be supplemented through the use of branched chain amino acids. The **branched-chain amino acids** (BCAAs) are a group of three essential **amino acids**: leucine, isoleucine and valine.

They are essential, meaning they can't be produced by your body and must be obtained from food. BCAA supplements have been shown to build muscle, decrease muscle fatigue, alleviate muscle soreness as well as assist in management of HE.

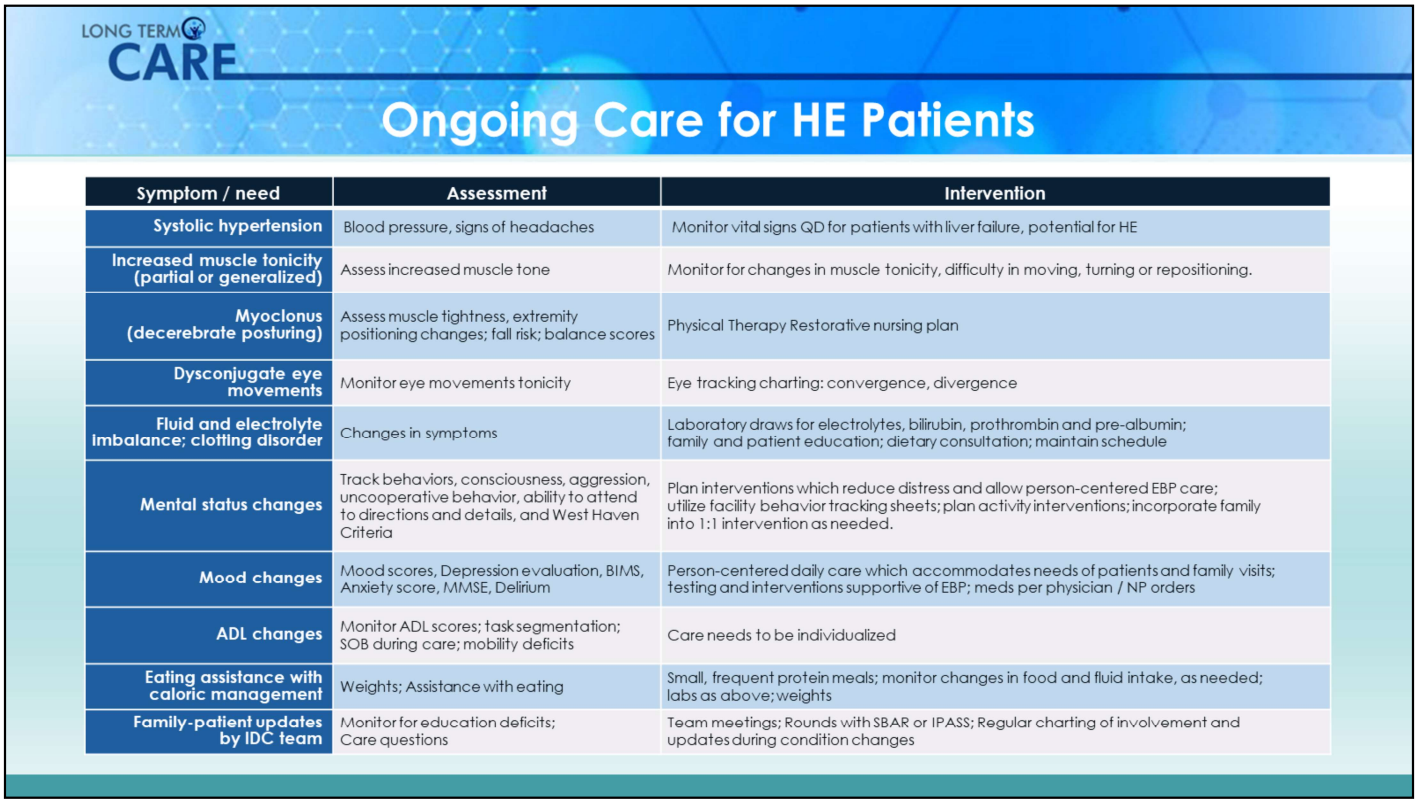
We started with the oral route by mouth with diet, then moved to NG tube options with branched chain amino acids – now we move to intravenous solutions with L-Ornithine-L-aspartate. L-ornithine L-aspartate can lower blood ammonia levels and so may have beneficial effects in people with hepatic encephalopathy or help stop them developing it.



Facilitator Notes:

For patients unable to be treated with medications – there are surgical options such as blocking the portosystemic shunts

When all else fails, so to speak, patients may have the opportunity for liver transplant. While liver transplant can reverse many of the issues of HE, for many patients the cognitive impairment may persist. As such, liver transplant is typically reserved for patients who do not have significant or long standing cognitive deficits.



Symptom / need	Assessment	Intervention
Systolic hypertension	Blood pressure, signs of headaches	Monitor vital signs QD for patients with liver failure, potential for HE
Increased muscle tonicity (partial or generalized)	Assess increased muscle tone	Monitor for changes in muscle tonicity, difficulty in moving, turning or repositioning.
Myoclonus (decerebrate posturing)	Assess muscle tightness, extremity positioning changes; fall risk; balance scores	Physical Therapy Restorative nursing plan
Dysconjugate eye movements	Monitor eye movements tonicity	Eye tracking charting: convergence, divergence
Fluid and electrolyte imbalance; clotting disorder	Changes in symptoms	Laboratory draws for electrolytes, bilirubin, prothrombin and pre-albumin; family and patient education; dietary consultation; maintain schedule
Mental status changes	Track behaviors, consciousness, aggression, uncooperative behavior, ability to attend to directions and details, and West Haven Criteria	Plan interventions which reduce distress and allow person-centered EBP care; utilize facility behavior tracking sheets; plan activity interventions; incorporate family into 1:1 intervention as needed.
Mood changes	Mood scores, Depression evaluation, BIMS, Anxiety score, MMSE, Delirium	Person-centered daily care which accommodates needs of patients and family visits; testing and interventions supportive of EBP; meds per physician / NP orders
ADL changes	Monitor ADL scores; task segmentation; SOB during care; mobility deficits	Care needs to be individualized
Eating assistance with caloric management	Weights; Assistance with eating	Small, frequent protein meals; monitor changes in food and fluid intake, as needed; labs as above; weights
Family-patient updates by IDC team	Monitor for education deficits; Care questions	Team meetings; Rounds with SBAR or IPASS; Regular charting of involvement and updates during condition changes

Facilitator Notes:

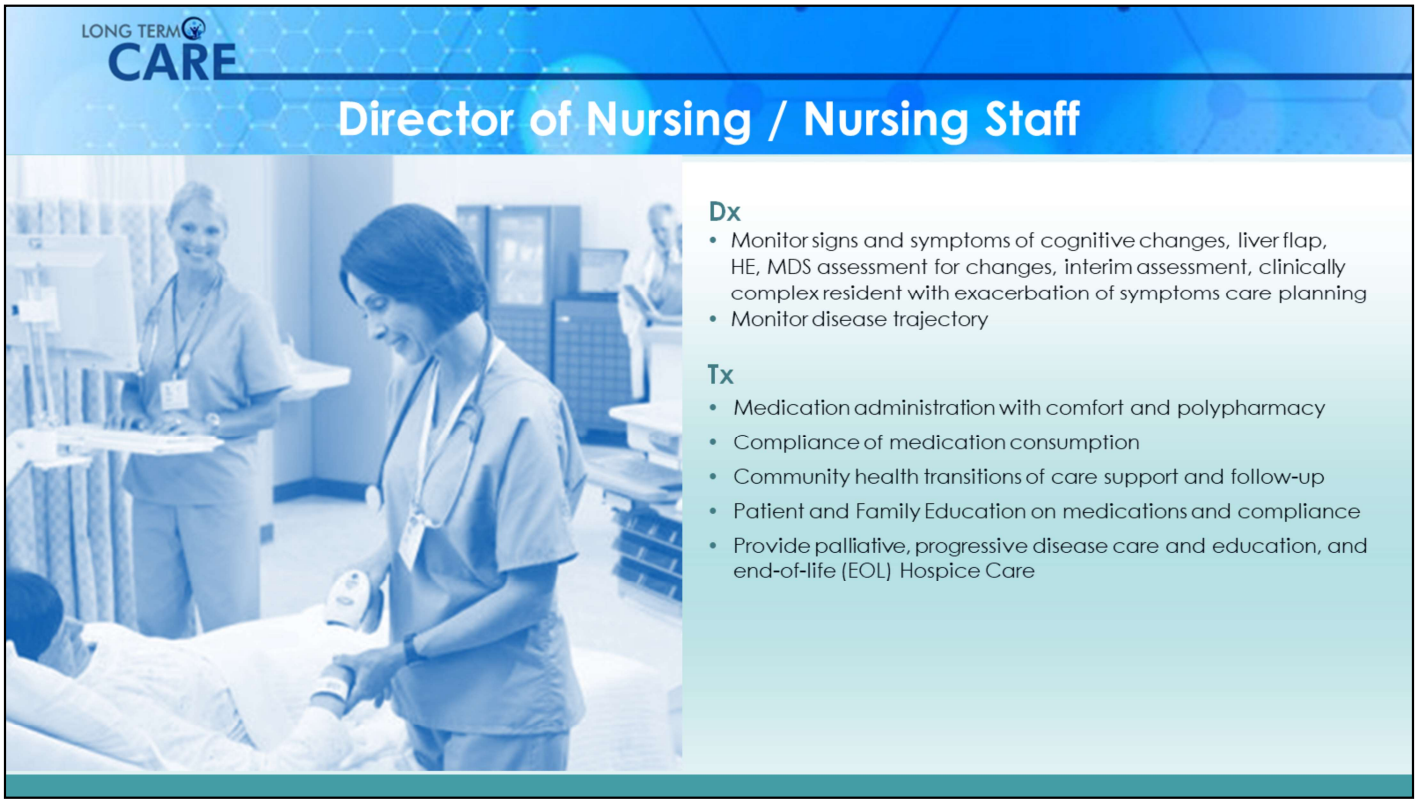
There are specific symptoms that are common in HE patients – these require specific assessments and interventions. Many of these symptoms exist with other diseases and their assessment and interventions are no different with team approach such as therapy and 1:1 when needed.

Facilitator Notes:

Like many other conditions affecting older adults – HE is chronic and progressive. As such, there may be a time for palliative care. However, as with hospice and other end-of-life programs, palliative care tends to be used far too late in the course of diseases. Better recognition and earlier use of this care option can certainly improve quality of life and even improve survival.

Facilitator Notes:

From recognition, to diagnosis, through to treatment, we have seeing example after example for different members of the Interdisciplinary Team. – Now, let's spend our last few minutes highlighting members' roles and responsibilities.

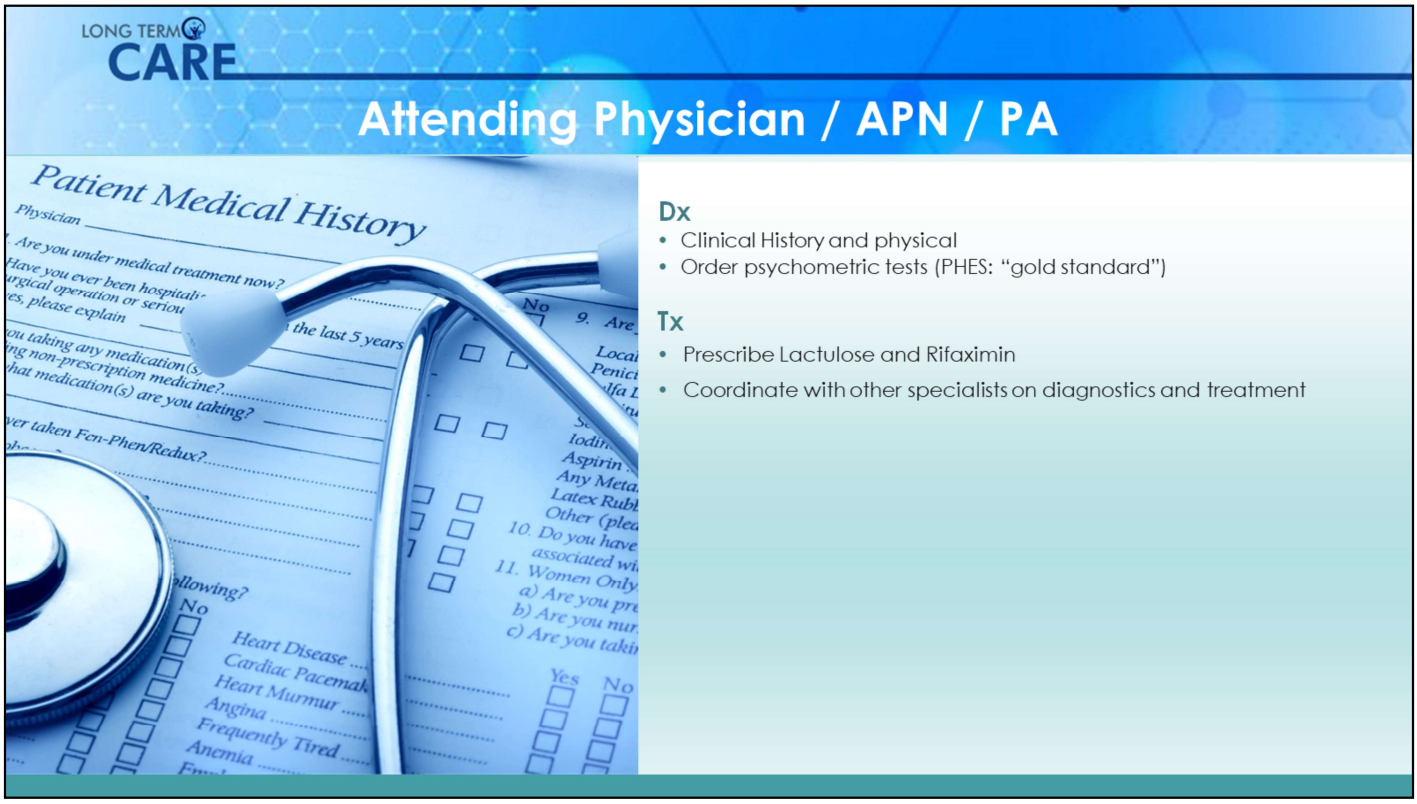


Facilitator Notes:

Let's start with our nursing staff. As those who stand on the frontlines in most condition management, their critical role in care of patients with HE is no exception.

Here it starts with recognition of the signs and symptoms to make the attending and others aware of these issues. Of course this is not a one and done but requires ongoing monitoring and updating on changes as HE will progress and fluctuate over time.

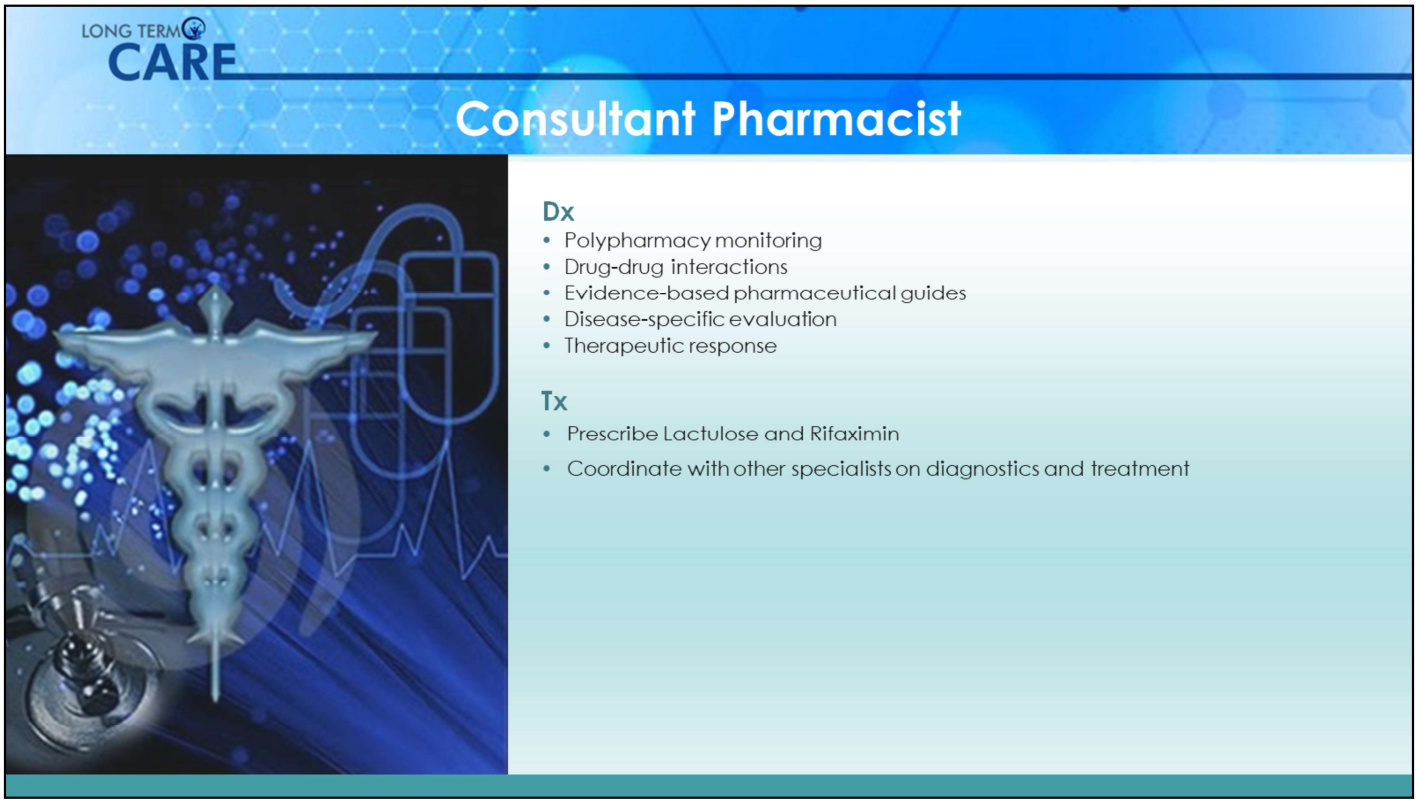
Nursing also plays a key role in treatment – both in following orders, as well as in assisting in patient and family education regarding transitions. These included transitioning home from our subacute units or transitioning to palliative care programs within our facility.



Facilitator Notes:

Of course, the orders for treatment must come from the attending, but again this is often based on information provided by nursing staff. For example, communicating through SBAR the critical information to attending can go a long way toward ensuring proper management. Collectively, the attending physician, APN and PA have the following roles and responsibilities:

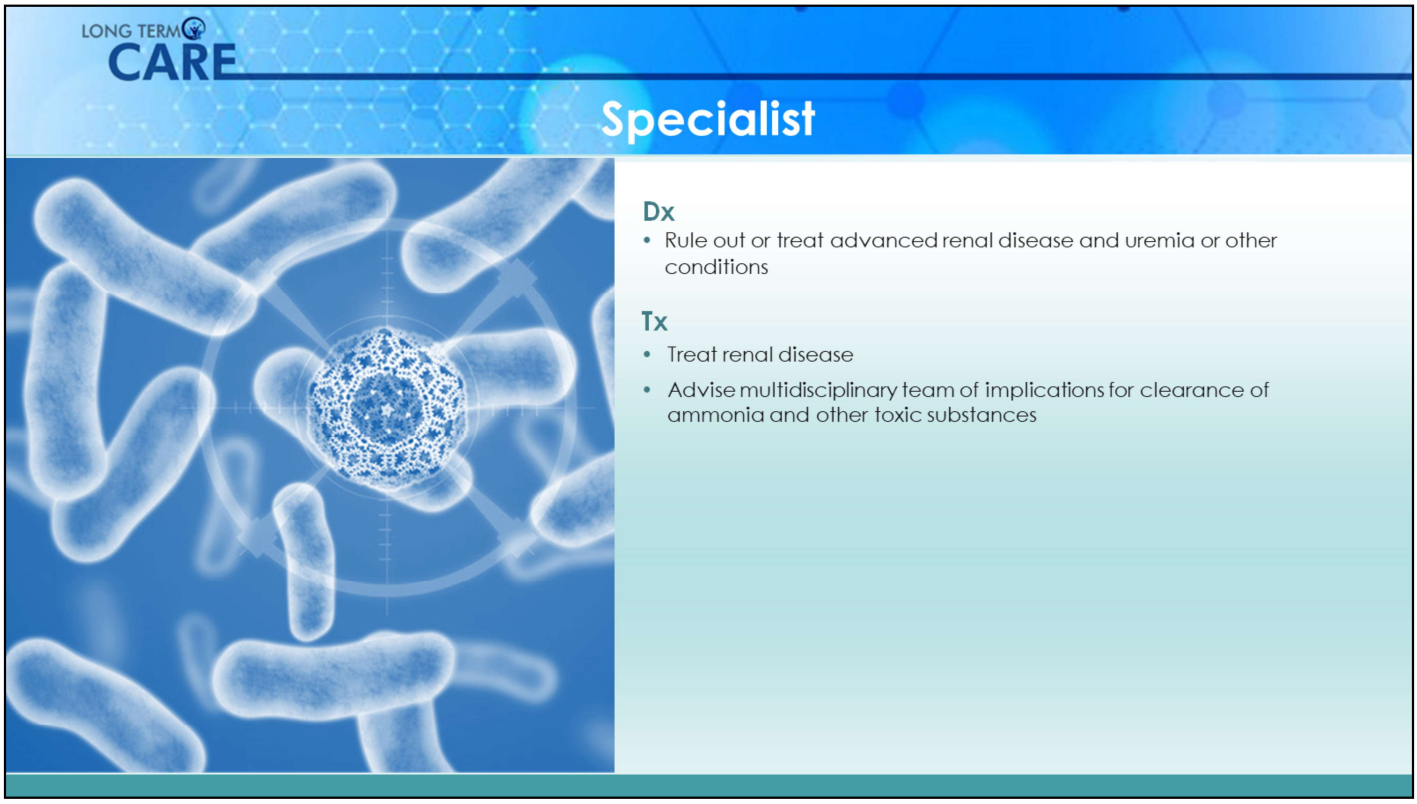
- Describing the Situation with regard signs and symptoms of HE in detail
- Obtaining patient background with regard such factors as cirrhosis or end stage liver disease
- Assessment regarding the current situation in terms of vitals and other physician and cognitive issues
- Conducting continuous quality improvement (CQI) staff training to include the learnings from this program in addition to the scenario we started with regarding the confused patients where we requested a UA which could lead to an inappropriate use of antibiotics and missed opportunity to appropriately treat HE.



Facilitator Notes:

Also as part of our team is our Consultant Pharmacist who, through their monthly Drug Regimen Review can make recommendations on appropriate treatment options such as adding rifaximin to Lactulose for treating HE.

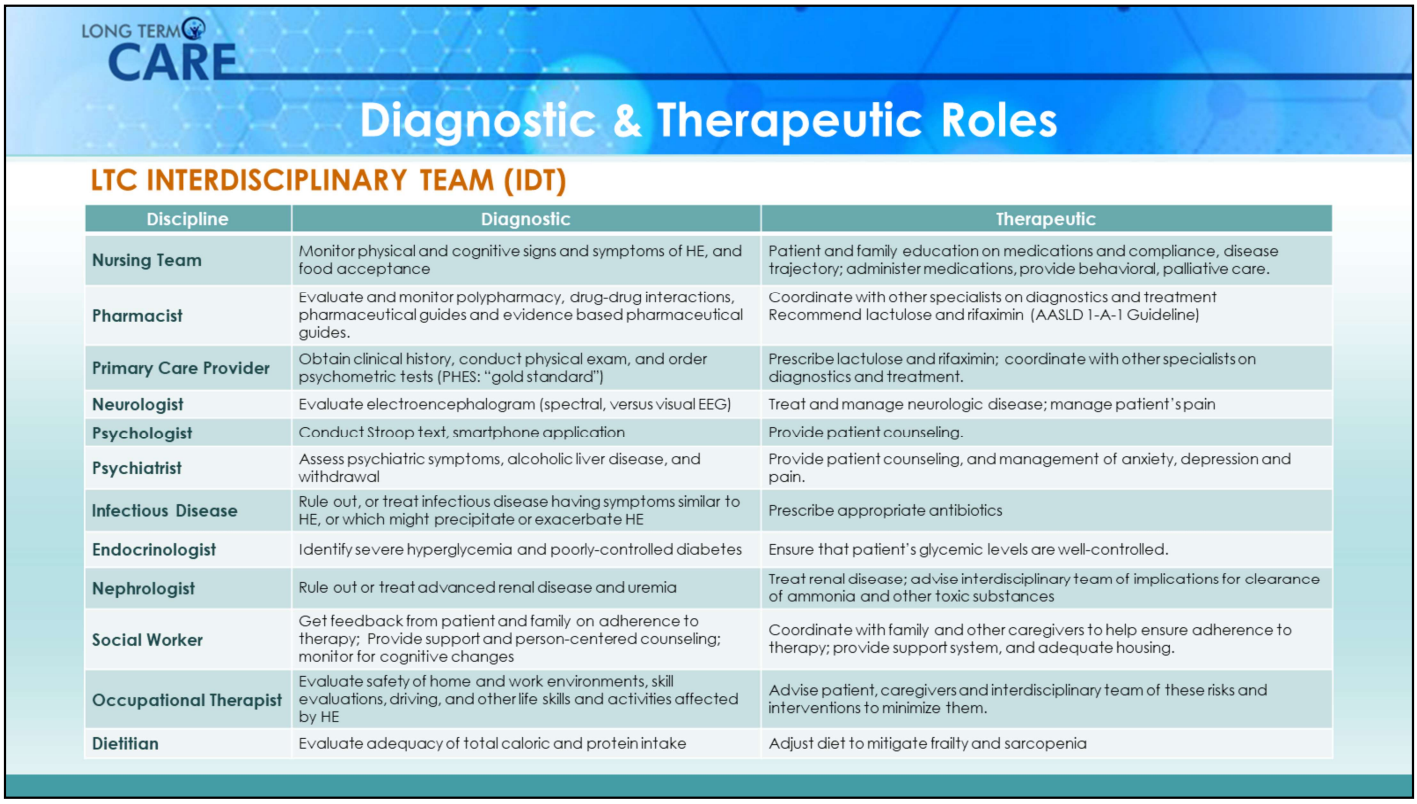
Here, too, nursing can provide to the Consultant Pharmacist the SBAR for these HE patients to assure appropriate care.



Facilitator Notes:

While it may be difficult to get a gastroenterologist, nephrologist, neurologist or liver specialist in to see a nursing home resident, we are seeing an increase in the use of telemedicine specialty services to improve access.

These are coming in the form of video conferences and other provider-to-provider links which can increase the specialty care options for these patients within the SNF, rather than forcing them out into the community for care.



Discipline	Diagnostic	Therapeutic
Nursing Team	Monitor physical and cognitive signs and symptoms of HE, and food acceptance	Patient and family education on medications and compliance, disease trajectory; administer medications, provide behavioral, palliative care.
Pharmacist	Evaluate and monitor polypharmacy, drug-drug interactions, pharmaceutical guides and evidence based pharmaceutical guides.	Coordinate with other specialists on diagnostics and treatment Recommend lactulose and rifaximin (AASLD 1-A-1 Guideline)
Primary Care Provider	Obtain clinical history, conduct physical exam, and order psychometric tests (PHES: "gold standard")	Prescribe lactulose and rifaximin; coordinate with other specialists on diagnostics and treatment.
Neurologist	Evaluate electroencephalogram (spectral, versus visual EEG)	Treat and manage neurologic disease; manage patient's pain
Psychologist	Conduct Stroop text, smartphone application	Provide patient counseling.
Psychiatrist	Assess psychiatric symptoms, alcoholic liver disease, and withdrawal	Provide patient counseling, and management of anxiety, depression and pain.
Infectious Disease	Rule out, or treat infectious disease having symptoms similar to HE, or which might precipitate or exacerbate HE	Prescribe appropriate antibiotics
Endocrinologist	Identify severe hyperglycemia and poorly-controlled diabetes	Ensure that patient's glycemic levels are well-controlled.
Nephrologist	Rule out or treat advanced renal disease and uremia	Treat renal disease; advise interdisciplinary team of implications for clearance of ammonia and other toxic substances
Social Worker	Get feedback from patient and family on adherence to therapy; Provide support and person-centered counseling; monitor for cognitive changes	Coordinate with family and other caregivers to help ensure adherence to therapy; provide support system, and adequate housing.
Occupational Therapist	Evaluate safety of home and work environments, skill evaluations, driving, and other life skills and activities affected by HE	Advise patient, caregivers and interdisciplinary team of these risks and interventions to minimize them.
Dietitian	Evaluate adequacy of total caloric and protein intake	Adjust diet to mitigate frailty and sarcopenia

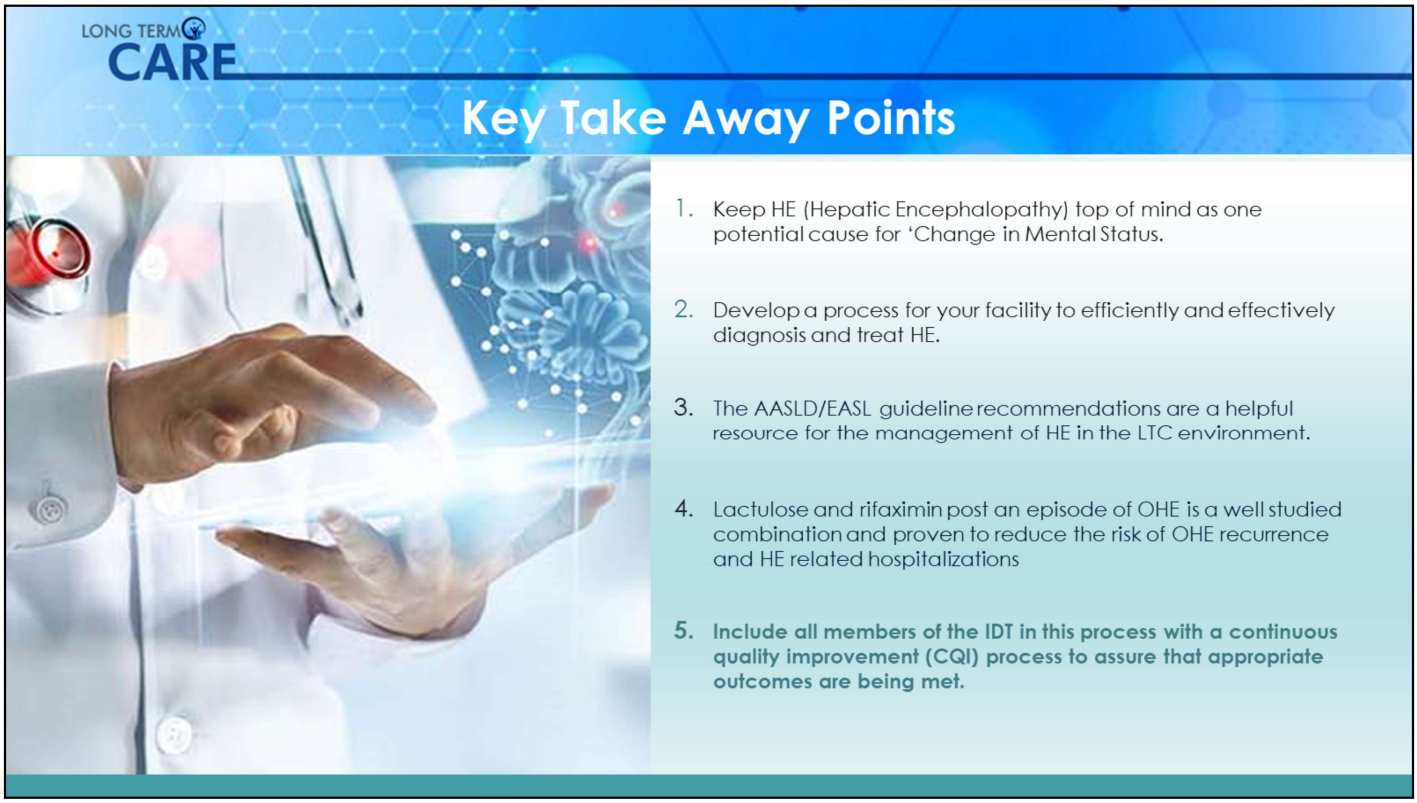
Facilitator Notes:

In summary, the selection of treatment agents is only a part of the management of HE. As in most conditions, in LTC a team is needed for successful management, and this starts with nursing.

Please utilize this table, which provides guidance for the extended LTC treatment team, as a reference within your facilities.

Facilitator Notes:

Now lets take a moment to review the key takeaway points that we can put into action to improve the care of our patients.



Three key points to take away include the following:

1. Keep HE (Hepatic Encephalopathy) top of mind as one potential cause for 'Change in Mental Status'
    - It's often said that we don't know what we don't know so if we didn't know about HE before this discussion we would never consider it as a possible reason for a change in mental status – Now that we know, it's up to us to keep it top of mind as one of the possibilities.

2. Develop a process for your facility to efficiently and effectively diagnosis and treat HE.
    - Knowing is one thing but for things to happen consistently, a process needs to be instituted. So, let's not have it end here, but rather work as a team to develop a process for the appropriate management of our patients with mental status changes that includes consideration of HE.

3. The AASLD/EASL guideline recommendations are a helpful resource for the management of HE in the LTC environment.

4. Lactulose and rifaximin post an episode of OHE is a well studied combination and proven to reduce the risk of OHE recurrence and HE related hospitalizations

5. Include all members of the IDT in this process with a CQI process to assure that appropriate outcomes are being met – This process that we develop requires all members of the IDT as well as continuous quality improvement, as it is never a one-and-done, but requires us working together each and every day to improve the care of our patients -especially those experiencing mental status changes from HE.

Together we can make a real difference.

Facilitator Notes:

Now let's take a few moments to address any questions or thoughts on the process we should implement to best management our patients with HE

LONG TERM CARE

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