

WEBVTT

NOTE duration:"00:13:54"

NOTE recognizability:0.815

NOTE language:en-us

NOTE Confidence: 0.862873932

00:00:05.580 --> 00:00:06.660 I think, yeah, you're muted.

NOTE Confidence: 0.859757537

00:00:10.060 --> 00:00:11.125 Sorry about that.

NOTE Confidence: 0.859757537

00:00:11.125 --> 00:00:13.610 Our next speaker is Doctor Joseph Lim,

NOTE Confidence: 0.859757537

00:00:13.610 --> 00:00:15.554 who's professor of Medicine,

NOTE Confidence: 0.859757537

00:00:15.554 --> 00:00:17.498 Director of Clinical Hepatology.

NOTE Confidence: 0.859757537

00:00:17.500 --> 00:00:19.430 Within the section of digestive

NOTE Confidence: 0.859757537

00:00:19.430 --> 00:00:21.776 diseases and the Vice chief of

NOTE Confidence: 0.859757537

00:00:21.776 --> 00:00:23.511 the section of digestive diseases

NOTE Confidence: 0.859757537

00:00:23.511 --> 00:00:25.784 here at Yale and his optimistic

NOTE Confidence: 0.859757537

00:00:25.784 --> 00:00:28.238 topic is viral hepatitis game over.

NOTE Confidence: 0.94335544

00:00:31.120 --> 00:00:31.730 Joseph.

NOTE Confidence: 0.8550011175

00:00:33.220 --> 00:00:35.040 Read it, thank you so much for

NOTE Confidence: 0.8550011175

00:00:35.040 --> 00:00:36.299 the opportunity to be here.

NOTE Confidence: 0.8550011175

00:00:36.300 --> 00:00:38.740 Special congratulations to Michael and  
NOTE Confidence: 0.8550011175

00:00:38.740 --> 00:00:41.650 Mario for this really amazing program  
NOTE Confidence: 0.8550011175

00:00:41.650 --> 00:00:44.834 today to celebrate 75 years of your liver,  
NOTE Confidence: 0.8550011175

00:00:44.840 --> 00:00:47.536 I've been tasked with a topic of viral  
NOTE Confidence: 0.8550011175

00:00:47.536 --> 00:00:49.206 hepatitis game over question mark  
NOTE Confidence: 0.8550011175

00:00:49.206 --> 00:00:51.820 and I think that's going to be very  
NOTE Confidence: 0.8550011175

00:00:51.820 --> 00:00:54.028 important because my hypothesis is that  
NOTE Confidence: 0.8550011175

00:00:54.028 --> 00:00:56.484 it's going to be a very challenging  
NOTE Confidence: 0.8550011175

00:00:56.484 --> 00:00:58.964 in fact to achieve this goal of  
NOTE Confidence: 0.8550011175

00:00:58.964 --> 00:01:01.340 elimination of both acute and chronic  
NOTE Confidence: 0.8550011175

00:01:01.340 --> 00:01:03.610 viral hepatitis in the short term.  
NOTE Confidence: 0.8550011175

00:01:03.610 --> 00:01:05.986 And as we will highlight furthermore,  
NOTE Confidence: 0.8550011175

00:01:05.990 --> 00:01:08.726 that The Who and the US Department Health  
NOTE Confidence: 0.8550011175

00:01:08.726 --> 00:01:10.385 Services have actually articulated  
NOTE Confidence: 0.8550011175

00:01:10.385 --> 00:01:12.655 specific goals for vehicles limination  
NOTE Confidence: 0.8550011175

00:01:12.655 --> 00:01:15.330 in the United States and globally.

NOTE Confidence: 0.8550011175

00:01:15.330 --> 00:01:18.830 So a very briefly what to do is go through

NOTE Confidence: 0.8550011175

00:01:18.830 --> 00:01:22.750 the abilities that will be discussed today.

NOTE Confidence: 0.8550011175

00:01:22.750 --> 00:01:26.532 Briefly, hepatitis ABCD&amp;E many of you

NOTE Confidence: 0.8550011175

00:01:26.532 --> 00:01:28.650 are very familiar with the concept

NOTE Confidence: 0.8550011175

00:01:28.720 --> 00:01:31.285 that whereas chronic hepatitis BC&amp;D

NOTE Confidence: 0.8550011175

00:01:31.285 --> 00:01:34.675 are largely bloodborne or body fluid.

NOTE Confidence: 0.8550011175

00:01:34.680 --> 00:01:37.638 Mediated transmission with a chronic form.

NOTE Confidence: 0.8550011175

00:01:37.640 --> 00:01:39.240 Acute hepatitis. I'm sorry.

NOTE Confidence: 0.8550011175

00:01:39.240 --> 00:01:41.640 Acute hepatitis A and hepatitis E

NOTE Confidence: 0.8550011175

00:01:41.711 --> 00:01:43.783 generally are transmitted through

NOTE Confidence: 0.8550011175

00:01:43.783 --> 00:01:46.373 fecal oral transmission and are

NOTE Confidence: 0.8550011175

00:01:46.373 --> 00:01:48.539 predominantly in acute form with very,

NOTE Confidence: 0.8550011175

00:01:48.540 --> 00:01:50.036 very rare chronic form,

NOTE Confidence: 0.8550011175

00:01:50.036 --> 00:01:53.320 at least in the case of hepatitis E,

NOTE Confidence: 0.8550011175

00:01:53.320 --> 00:01:56.295 so peptides a very briefly a question.

NOTE Confidence: 0.8550011175

00:01:56.300 --> 00:01:58.796 I'm raised opposed to there is.  
NOTE Confidence: 0.8550011175

00:01:58.800 --> 00:02:01.369 Can we limit the hepatitis A hepatitis  
NOTE Confidence: 0.8550011175

00:02:01.369 --> 00:02:04.469 A is an RNA virus that presents.  
NOTE Confidence: 0.8550011175

00:02:04.470 --> 00:02:06.854 In the form of acute hepatitis with a  
NOTE Confidence: 0.8550011175

00:02:06.854 --> 00:02:09.727 very low rate of fulminant hepatic failure,  
NOTE Confidence: 0.8550011175

00:02:09.730 --> 00:02:11.884 the global incidence of of acute  
NOTE Confidence: 0.8550011175

00:02:11.884 --> 00:02:14.609 HIV is proxy 1.4 million cases per  
NOTE Confidence: 0.8550011175

00:02:14.609 --> 00:02:16.624 year in the United States,  
NOTE Confidence: 0.8550011175

00:02:16.630 --> 00:02:17.674 or sorry globally,  
NOTE Confidence: 0.8550011175

00:02:17.674 --> 00:02:19.414 but the incidence in United  
NOTE Confidence: 0.8550011175

00:02:19.414 --> 00:02:21.532 States has been rising actually  
NOTE Confidence: 0.8550011175

00:02:21.532 --> 00:02:23.344 quite substantially since 2016.  
NOTE Confidence: 0.8550011175

00:02:23.350 --> 00:02:25.037 In the figure on the right you  
NOTE Confidence: 0.8550011175

00:02:25.037 --> 00:02:27.368 can see here that there has been a  
NOTE Confidence: 0.8550011175

00:02:27.368 --> 00:02:28.913 significant rise in both reported  
NOTE Confidence: 0.8550011175

00:02:28.970 --> 00:02:30.740 and estimated infections such that

NOTE Confidence: 0.8550011175  
00:02:30.740 --> 00:02:32.968 by 2019 the estimated number of  
NOTE Confidence: 0.8550011175  
00:02:32.968 --> 00:02:35.258 infections approximately 37 to 38.  
NOTE Confidence: 0.8550011175  
00:02:35.260 --> 00:02:36.648 1000 within that year,  
NOTE Confidence: 0.8550011175  
00:02:36.648 --> 00:02:39.193 and we believe that there are very  
NOTE Confidence: 0.8550011175  
00:02:39.193 --> 00:02:41.521 specific at risk groups of which  
NOTE Confidence: 0.8550011175  
00:02:41.521 --> 00:02:43.220 this is particularly common,  
NOTE Confidence: 0.8550011175  
00:02:43.220 --> 00:02:44.850 but the risk factors that  
NOTE Confidence: 0.8550011175  
00:02:44.850 --> 00:02:46.480 benefited our injection drug use,  
NOTE Confidence: 0.8550011175  
00:02:46.480 --> 00:02:47.926 sexual contact country,  
NOTE Confidence: 0.8550011175  
00:02:47.926 --> 00:02:50.762 and the MSM population, household contacts,  
NOTE Confidence: 0.8550011175  
00:02:50.762 --> 00:02:51.664 international travel.  
NOTE Confidence: 0.8550011175  
00:02:51.664 --> 00:02:54.370 And although this is not described  
NOTE Confidence: 0.8550011175  
00:02:54.436 --> 00:02:56.096 in the risk factor analysis,  
NOTE Confidence: 0.8550011175  
00:02:56.100 --> 00:02:58.236 we know that these are overrepresented  
NOTE Confidence: 0.8550011175  
00:02:58.236 --> 00:03:00.091 in the homeless populations which  
NOTE Confidence: 0.8550011175

00:03:00.091 --> 00:03:01.951 for which we have identified  
NOTE Confidence: 0.8550011175

00:03:01.951 --> 00:03:03.439 specific outbreaks across multiple  
NOTE Confidence: 0.8550011175

00:03:03.500 --> 00:03:05.390 urban areas with the United States.  
NOTE Confidence: 0.8550011175

00:03:05.390 --> 00:03:07.676 Now state report outbreaks was begun  
NOTE Confidence: 0.8550011175

00:03:07.676 --> 00:03:10.387 to be collected by the CDC in 2016,  
NOTE Confidence: 0.8550011175

00:03:10.390 --> 00:03:13.450 and so over the last five to six years.  
NOTE Confidence: 0.8550011175

00:03:13.450 --> 00:03:15.140 Specifically in the context outbreaks,  
NOTE Confidence: 0.8550011175

00:03:15.140 --> 00:03:18.866 they're over 43,000 cases in over  
NOTE Confidence: 0.8550011175

00:03:18.866 --> 00:03:21.700 26,000 hospitalizations and 423 deaths  
NOTE Confidence: 0.8550011175

00:03:21.700 --> 00:03:24.125 attributable to hepatitis A infection,  
NOTE Confidence: 0.8550011175

00:03:24.130 --> 00:03:24.672 and so,  
NOTE Confidence: 0.8550011175

00:03:24.672 --> 00:03:26.027 whereas we historically have believed  
NOTE Confidence: 0.8550011175

00:03:26.027 --> 00:03:27.704 this to be associated with very  
NOTE Confidence: 0.8550011175

00:03:27.704 --> 00:03:29.601 low rates of flow and liver failure  
NOTE Confidence: 0.8550011175

00:03:29.652 --> 00:03:30.330 of zero point,  
NOTE Confidence: 0.8550011175

00:03:30.330 --> 00:03:32.570 1% more recent data here in the

NOTE Confidence: 0.8550011175  
00:03:32.570 --> 00:03:34.531 United States suggest case fatality  
NOTE Confidence: 0.8550011175  
00:03:34.531 --> 00:03:35.862 rates approaching 1.0.  
NOTE Confidence: 0.8550011175  
00:03:35.862 --> 00:03:36.254 Percent,  
NOTE Confidence: 0.8550011175  
00:03:36.254 --> 00:03:38.606 and this is been concentrated again  
NOTE Confidence: 0.8550011175  
00:03:38.606 --> 00:03:40.910 in very specific populations,  
NOTE Confidence: 0.8550011175  
00:03:40.910 --> 00:03:42.842 particularly in those with  
NOTE Confidence: 0.8550011175  
00:03:42.842 --> 00:03:45.257 immunocompromised or chronic liver disease.  
NOTE Confidence: 0.8550011175  
00:03:45.260 --> 00:03:46.200 Do we have a vaccine?  
NOTE Confidence: 0.8550011175  
00:03:46.200 --> 00:03:48.657 Hepatitis A yes, this is viewed as a vaccine.  
NOTE Confidence: 0.748467928888889  
00:03:48.660 --> 00:03:49.935 Preventable infection in  
NOTE Confidence: 0.748467928888889  
00:03:49.935 --> 00:03:52.485 the form of havrix or vecta,  
NOTE Confidence: 0.748467928888889  
00:03:52.490 --> 00:03:55.015 and unfortunately we have clear  
NOTE Confidence: 0.748467928888889  
00:03:55.015 --> 00:03:57.035 documentation that vaccination rates  
NOTE Confidence: 0.748467928888889  
00:03:57.035 --> 00:03:59.948 in the United States and endemic  
NOTE Confidence: 0.748467928888889  
00:03:59.948 --> 00:04:01.812 regions remain startling low,  
NOTE Confidence: 0.748467928888889

00:04:01.820 --> 00:04:02.825 and therefore there remains much  
NOTE Confidence: 0.748467928888889

00:04:02.825 --> 00:04:04.060 work that needs to be done.  
NOTE Confidence: 0.748467928888889

00:04:04.060 --> 00:04:06.188 If we're going to achieve elimination of.  
NOTE Confidence: 0.748467928888889

00:04:06.190 --> 00:04:08.830 It's a incidence in the  
NOTE Confidence: 0.748467928888889

00:04:08.830 --> 00:04:10.942 United States and worldwide.  
NOTE Confidence: 0.748467928888889

00:04:10.950 --> 00:04:12.930 There is one treatment and specific  
NOTE Confidence: 0.748467928888889

00:04:12.930 --> 00:04:15.016 context of those who are at high  
NOTE Confidence: 0.748467928888889

00:04:15.016 --> 00:04:17.011 risk for morbidity and mortality  
NOTE Confidence: 0.748467928888889

00:04:17.011 --> 00:04:19.546 and form of immune globulin.  
NOTE Confidence: 0.748467928888889

00:04:19.550 --> 00:04:21.886 Hepatitis B briefly is a DNA virus for  
NOTE Confidence: 0.748467928888889

00:04:21.886 --> 00:04:24.211 which we have both acute and chronic  
NOTE Confidence: 0.748467928888889

00:04:24.211 --> 00:04:26.889 forms of the global burden is substantial.  
NOTE Confidence: 0.748467928888889

00:04:26.890 --> 00:04:29.172 It is estimated that over 2 billion  
NOTE Confidence: 0.748467928888889

00:04:29.172 --> 00:04:30.914 persons have been infected acutely  
NOTE Confidence: 0.748467928888889

00:04:30.914 --> 00:04:33.014 and that the chronic form of  
NOTE Confidence: 0.748467928888889

00:04:33.014 --> 00:04:34.846 hepatitis B is currently present

NOTE Confidence: 0.748467928888889  
00:04:34.846 --> 00:04:37.168 in 257 to 292,000,000 person.  
NOTE Confidence: 0.748467928888889  
00:04:37.168 --> 00:04:37.660 Globally,  
NOTE Confidence: 0.748467928888889  
00:04:37.660 --> 00:04:39.879 our research group and Clarion with Stanford,  
NOTE Confidence: 0.748467928888889  
00:04:39.880 --> 00:04:42.682 with many nuyen and Rakim have  
NOTE Confidence: 0.748467928888889  
00:04:42.682 --> 00:04:44.550 demonstrated evidence that the  
NOTE Confidence: 0.748467928888889  
00:04:44.633 --> 00:04:47.358 updated US burden is approximately  
NOTE Confidence: 0.748467928888889  
00:04:47.358 --> 00:04:49.538 1.6 million persons globally.  
NOTE Confidence: 0.748467928888889  
00:04:49.540 --> 00:04:51.028 This amounts to approximately  
NOTE Confidence: 0.748467928888889  
00:04:51.028 --> 00:04:52.516 120,000 deaths per year.  
NOTE Confidence: 0.748467928888889  
00:04:52.520 --> 00:04:55.032 On top of that we have new infections  
NOTE Confidence: 0.748467928888889  
00:04:55.032 --> 00:04:56.183 numbering in approximately  
NOTE Confidence: 0.748467928888889  
00:04:56.183 --> 00:04:58.438 1.5 million persons per year.  
NOTE Confidence: 0.748467928888889  
00:04:58.440 --> 00:05:00.136 We recognize there's substantial  
NOTE Confidence: 0.748467928888889  
00:05:00.136 --> 00:05:02.680 under diagnosis of hepatitis B and  
NOTE Confidence: 0.748467928888889  
00:05:02.745 --> 00:05:04.617 unfortunately our current guidelines  
NOTE Confidence: 0.748467928888889

00:05:04.617 --> 00:05:07.425 by the ASLD through European Society.

NOTE Confidence: 0.748467928888889

00:05:07.430 --> 00:05:10.020 And by the US Preventive task force

NOTE Confidence: 0.748467928888889

00:05:10.020 --> 00:05:13.110 is a risk factor based screening.

NOTE Confidence: 0.748467928888889

00:05:13.110 --> 00:05:14.860 Tool specifically focusing on those

NOTE Confidence: 0.748467928888889

00:05:14.860 --> 00:05:17.140 who are are from endemic regions.

NOTE Confidence: 0.748467928888889

00:05:17.140 --> 00:05:19.350 Those who have HIV injection,

NOTE Confidence: 0.748467928888889

00:05:19.350 --> 00:05:20.246 drug users,

NOTE Confidence: 0.748467928888889

00:05:20.246 --> 00:05:22.934 MSM and either household or sexual

NOTE Confidence: 0.748467928888889

00:05:22.934 --> 00:05:24.670 contacts is my opinion and shared

NOTE Confidence: 0.748467928888889

00:05:24.670 --> 00:05:26.351 by many thought that if we're

NOTE Confidence: 0.748467928888889

00:05:26.351 --> 00:05:28.061 going to truly identify infected

NOTE Confidence: 0.748467928888889

00:05:28.061 --> 00:05:30.060 persons more readily that we must

NOTE Confidence: 0.748467928888889

00:05:30.060 --> 00:05:31.788 move towards an expansion of risk

NOTE Confidence: 0.748467928888889

00:05:31.788 --> 00:05:34.356 factor based screening or move

NOTE Confidence: 0.748467928888889

00:05:34.356 --> 00:05:37.004 fully to universal screening.

NOTE Confidence: 0.748467928888889

00:05:37.010 --> 00:05:38.634 Now the the reason that we care

NOTE Confidence: 0.748467928888889  
00:05:38.634 --> 00:05:40.355 about hepatitis B ultimately is that  
NOTE Confidence: 0.748467928888889  
00:05:40.355 --> 00:05:41.985 this is social substantial morbidity  
NOTE Confidence: 0.748467928888889  
00:05:41.985 --> 00:05:43.588 mortality due to the development.  
NOTE Confidence: 0.748467928888889  
00:05:43.590 --> 00:05:45.570 This and liver failure and hepatitis  
NOTE Confidence: 0.748467928888889  
00:05:45.570 --> 00:05:47.672 B has a unique association with  
NOTE Confidence: 0.748467928888889  
00:05:47.672 --> 00:05:49.808 liver cancer in terms of turning  
NOTE Confidence: 0.748467928888889  
00:05:49.808 --> 00:05:52.261 it on a number of oncogenic genes  
NOTE Confidence: 0.748467928888889  
00:05:52.261 --> 00:05:54.749 that can lead to HCC in the absence  
NOTE Confidence: 0.748467928888889  
00:05:54.749 --> 00:05:56.269 of liver cirrhosis.  
NOTE Confidence: 0.748467928888889  
00:05:56.270 --> 00:05:58.475 And it is believed that nearly one  
NOTE Confidence: 0.748467928888889  
00:05:58.475 --> 00:06:00.179 in four individuals with chronic  
NOTE Confidence: 0.748467928888889  
00:06:00.179 --> 00:06:02.629 hepatitis B infection will die as a  
NOTE Confidence: 0.748467928888889  
00:06:02.629 --> 00:06:04.274 consequence of HPV related complications  
NOTE Confidence: 0.748467928888889  
00:06:04.274 --> 00:06:06.467 of for which HTC is most prominent.  
NOTE Confidence: 0.748467928888889  
00:06:06.467 --> 00:06:08.826 We do have a vaccine triptis B  
NOTE Confidence: 0.748467928888889

00:06:08.826 --> 00:06:10.952 this is vaccine preventable and  
NOTE Confidence: 0.748467928888889

00:06:10.952 --> 00:06:13.706 Jericho or convex three step series.  
NOTE Confidence: 0.748467928888889

00:06:13.710 --> 00:06:16.013 And helpless tab is a recently approved  
NOTE Confidence: 0.748467928888889

00:06:16.013 --> 00:06:17.959 two step series over one month.  
NOTE Confidence: 0.748467928888889

00:06:17.960 --> 00:06:19.745 Now that it appears to be more  
NOTE Confidence: 0.748467928888889

00:06:19.745 --> 00:06:21.582 immunogenic and we do have three  
NOTE Confidence: 0.748467928888889

00:06:21.582 --> 00:06:22.934 oral nucleoside nucleotide analogs  
NOTE Confidence: 0.748467928888889

00:06:22.934 --> 00:06:24.946 going to approve and license for  
NOTE Confidence: 0.748467928888889

00:06:24.946 --> 00:06:26.194 the treatment hepatitis B,  
NOTE Confidence: 0.748467928888889

00:06:26.200 --> 00:06:27.940 which are highly effective and  
NOTE Confidence: 0.748467928888889

00:06:27.940 --> 00:06:30.718 suppression of the DNA but is not curative,  
NOTE Confidence: 0.748467928888889

00:06:30.720 --> 00:06:32.270 as well as piglet interference,  
NOTE Confidence: 0.748467928888889

00:06:32.270 --> 00:06:35.012 which is time limited and has  
NOTE Confidence: 0.748467928888889

00:06:35.012 --> 00:06:37.676 similar efficacy but has substantial  
NOTE Confidence: 0.748467928888889

00:06:37.676 --> 00:06:40.656 limitations due to tolerability.  
NOTE Confidence: 0.748467928888889

00:06:40.660 --> 00:06:44.107 There are a number of therapies in phase one.

NOTE Confidence: 0.748467928888889  
00:06:44.110 --> 00:06:46.066 Phase two development which are focused  
NOTE Confidence: 0.748467928888889  
00:06:46.066 --> 00:06:47.835 on functional cure of hepatitis  
NOTE Confidence: 0.748467928888889  
00:06:47.835 --> 00:06:49.865 B which has garnered substantial  
NOTE Confidence: 0.748467928888889  
00:06:49.865 --> 00:06:51.980 interests along several different classes,  
NOTE Confidence: 0.748467928888889  
00:06:51.980 --> 00:06:53.900 including earning interference core  
NOTE Confidence: 0.748467928888889  
00:06:53.900 --> 00:06:55.468 embitters, entering inhibitors,  
NOTE Confidence: 0.748467928888889  
00:06:55.468 --> 00:06:57.644 immunomodulators and virion egress  
NOTE Confidence: 0.748467928888889  
00:06:57.644 --> 00:06:58.188 inhibition,  
NOTE Confidence: 0.748467928888889  
00:06:58.190 --> 00:07:00.332 which we believe may help move  
NOTE Confidence: 0.748467928888889  
00:07:00.332 --> 00:07:01.760 the needle towards more  
NOTE Confidence: 0.879316136111111  
00:07:01.835 --> 00:07:04.565 effective cures for those who are  
NOTE Confidence: 0.879316136111111  
00:07:04.565 --> 00:07:06.206 chronically infected. Hepatitis C.  
NOTE Confidence: 0.879316136111111  
00:07:06.206 --> 00:07:09.110 This RNA virus with cute and chronic form.  
NOTE Confidence: 0.879316136111111  
00:07:09.110 --> 00:07:11.740 The burden is substantial globally  
NOTE Confidence: 0.879316136111111  
00:07:11.740 --> 00:07:14.248 estimated up to 71 million persons.  
NOTE Confidence: 0.879316136111111

00:07:14.250 --> 00:07:16.730 And by the way, as recently as ten years ago,  
NOTE Confidence: 0.879316136111111

00:07:16.730 --> 00:07:19.043 we've viewed this as nearly 170  
NOTE Confidence: 0.879316136111111

00:07:19.043 --> 00:07:21.374 million persons, and so this is a  
NOTE Confidence: 0.879316136111111

00:07:21.374 --> 00:07:23.069 significant shift in epidemiology.  
NOTE Confidence: 0.879316136111111

00:07:23.070 --> 00:07:26.045 Hepatitis C, driven largely by two phenomena,  
NOTE Confidence: 0.879316136111111

00:07:26.050 --> 00:07:28.006 one of which is increased burden  
NOTE Confidence: 0.879316136111111

00:07:28.006 --> 00:07:30.111 of AC related death and liver  
NOTE Confidence: 0.879316136111111

00:07:30.111 --> 00:07:31.946 cancer globally or last decade,  
NOTE Confidence: 0.879316136111111

00:07:31.950 --> 00:07:33.766 many of whom have succumbed to their illness,  
NOTE Confidence: 0.879316136111111

00:07:33.770 --> 00:07:36.220 and secondly due to the success of  
NOTE Confidence: 0.879316136111111

00:07:36.220 --> 00:07:38.417 oral directly out of our leading  
NOTE Confidence: 0.879316136111111

00:07:38.417 --> 00:07:40.559 to cure of a significant proportion  
NOTE Confidence: 0.879316136111111

00:07:40.559 --> 00:07:42.834 of patients in the United States  
NOTE Confidence: 0.879316136111111

00:07:42.834 --> 00:07:44.464 estimate about 2.7 million persons.  
NOTE Confidence: 0.879316136111111

00:07:44.470 --> 00:07:47.296 Globally, nearly 700,000 deaths per year.  
NOTE Confidence: 0.879316136111111

00:07:47.300 --> 00:07:49.110 Unfortunately at the same time

NOTE Confidence: 0.879316136111111  
00:07:49.110 --> 00:07:50.920 that we're trying to eliminate,  
NOTE Confidence: 0.879316136111111  
00:07:50.920 --> 00:07:52.520 see through curative therapies,  
NOTE Confidence: 0.879316136111111  
00:07:52.520 --> 00:07:55.417 we have an actual increase in new  
NOTE Confidence: 0.879316136111111  
00:07:55.417 --> 00:07:57.121 incident infections globally and  
NOTE Confidence: 0.879316136111111  
00:07:57.121 --> 00:07:59.737 with the United States there remains  
NOTE Confidence: 0.879316136111111  
00:07:59.737 --> 00:08:01.389 substantial under diagnosis of  
NOTE Confidence: 0.879316136111111  
00:08:01.389 --> 00:08:03.942 hepatitis C and as we'll discuss in  
NOTE Confidence: 0.879316136111111  
00:08:03.942 --> 00:08:05.870 a moment now that there has been a  
NOTE Confidence: 0.879316136111111  
00:08:05.926 --> 00:08:07.726 shift in screen commendations in 2020  
NOTE Confidence: 0.879316136111111  
00:08:07.726 --> 00:08:09.610 from a risk factor based training  
NOTE Confidence: 0.879316136111111  
00:08:09.610 --> 00:08:11.180 focus on the baby boomers.  
NOTE Confidence: 0.879316136111111  
00:08:11.180 --> 00:08:13.334 Those born 1945 to 1965 and  
NOTE Confidence: 0.879316136111111  
00:08:13.334 --> 00:08:14.770 those with risk factors.  
NOTE Confidence: 0.879316136111111  
00:08:14.770 --> 00:08:16.954 To universal screening such that we  
NOTE Confidence: 0.879316136111111  
00:08:16.954 --> 00:08:19.438 are now suggesting that all all adults  
NOTE Confidence: 0.879316136111111

00:08:19.438 --> 00:08:21.685 aged and older and all pregnant women  
NOTE Confidence: 0.879316136111111

00:08:21.748 --> 00:08:23.896 should undergo A1 time Pepsi antibody  
NOTE Confidence: 0.879316136111111

00:08:23.896 --> 00:08:26.798 test to identify the presence of hepatitis C.  
NOTE Confidence: 0.879316136111111

00:08:26.798 --> 00:08:29.000 Slimmer peptides B there remains substantial  
NOTE Confidence: 0.879316136111111

00:08:29.055 --> 00:08:31.449 morbidity mortality due to develop cirrhosis,  
NOTE Confidence: 0.879316136111111

00:08:31.450 --> 00:08:33.310 liver failure and liver cancer.  
NOTE Confidence: 0.879316136111111

00:08:33.310 --> 00:08:35.151 There is no vaccine for hepatitis C  
NOTE Confidence: 0.879316136111111

00:08:35.151 --> 00:08:37.035 at this time, although there remains  
NOTE Confidence: 0.879316136111111

00:08:37.035 --> 00:08:38.130 substantial interest terms.  
NOTE Confidence: 0.879316136111111

00:08:38.130 --> 00:08:40.350 Investigation form for  
NOTE Confidence: 0.879316136111111

00:08:40.350 --> 00:08:43.310 development of novel vaccines,  
NOTE Confidence: 0.879316136111111

00:08:43.310 --> 00:08:45.844 but the success of these to date.  
NOTE Confidence: 0.879316136111111

00:08:45.850 --> 00:08:47.332 Never made very,  
NOTE Confidence: 0.879316136111111

00:08:47.332 --> 00:08:48.320 very limited.  
NOTE Confidence: 0.879316136111111

00:08:48.320 --> 00:08:48.744 However,  
NOTE Confidence: 0.879316136111111

00:08:48.744 --> 00:08:50.440 in regards to treatment,

NOTE Confidence: 0.879316136111111  
00:08:50.440 --> 00:08:52.570 we are very fortunate that since  
NOTE Confidence: 0.879316136111111  
00:08:52.570 --> 00:08:54.890 2014 there has been a proliferation  
NOTE Confidence: 0.879316136111111  
00:08:54.890 --> 00:08:57.802 of what now comprises 7 distinct FDA  
NOTE Confidence: 0.879316136111111  
00:08:57.802 --> 00:09:00.035 approved all oral interferon free  
NOTE Confidence: 0.879316136111111  
00:09:00.035 --> 00:09:02.215 regimens that are associated with  
NOTE Confidence: 0.879316136111111  
00:09:02.215 --> 00:09:05.456 viral cure and over 90% of patients  
NOTE Confidence: 0.879316136111111  
00:09:05.460 --> 00:09:08.108 which leads us to believe that hep C  
NOTE Confidence: 0.879316136111111  
00:09:08.108 --> 00:09:10.906 among these viruses is the most likely  
NOTE Confidence: 0.879316136111111  
00:09:10.906 --> 00:09:12.971 to be susceptible to elimination.  
NOTE Confidence: 0.879316136111111  
00:09:12.980 --> 00:09:14.276 There remains drug developments  
NOTE Confidence: 0.879316136111111  
00:09:14.276 --> 00:09:16.220 in the form of novel generic.  
NOTE Confidence: 0.879316136111111  
00:09:16.220 --> 00:09:18.305 Formulations as well as long  
NOTE Confidence: 0.879316136111111  
00:09:18.305 --> 00:09:19.139 acting injectables,  
NOTE Confidence: 0.879316136111111  
00:09:19.140 --> 00:09:20.775 which can lead to potential  
NOTE Confidence: 0.879316136111111  
00:09:20.775 --> 00:09:22.910 cure in one or two shots.  
NOTE Confidence: 0.879316136111111

00:09:22.910 --> 00:09:26.389 Although the these have not yet reached  
NOTE Confidence: 0.879316136111111

00:09:26.390 --> 00:09:29.066 late phase trials at this time,  
NOTE Confidence: 0.879316136111111

00:09:29.070 --> 00:09:31.480 hepatitis delta is a satellite  
NOTE Confidence: 0.879316136111111

00:09:31.480 --> 00:09:33.408 virus and RNA form,  
NOTE Confidence: 0.879316136111111

00:09:33.410 --> 00:09:35.378 which occurs either as a convection  
NOTE Confidence: 0.879316136111111

00:09:35.378 --> 00:09:37.380 or super infection of those already  
NOTE Confidence: 0.879316136111111

00:09:37.380 --> 00:09:39.592 with hepatitis B and it requires both  
NOTE Confidence: 0.879316136111111

00:09:39.592 --> 00:09:41.637 the surface antigen of hepatitis B  
NOTE Confidence: 0.879316136111111

00:09:41.637 --> 00:09:43.645 and the large peptide delta antigen,  
NOTE Confidence: 0.879316136111111

00:09:43.645 --> 00:09:44.650 and as such,  
NOTE Confidence: 0.879316136111111

00:09:44.650 --> 00:09:46.660 unless you have hepatitis B first.  
NOTE Confidence: 0.879316136111111

00:09:46.660 --> 00:09:48.952 You will not be susceptible to  
NOTE Confidence: 0.879316136111111

00:09:48.952 --> 00:09:50.071 delta infection now.  
NOTE Confidence: 0.879316136111111

00:09:50.071 --> 00:09:51.475 This is a significant  
NOTE Confidence: 0.879316136111111

00:09:51.475 --> 00:09:52.177 underdiagnosed infection.  
NOTE Confidence: 0.879316136111111

00:09:52.180 --> 00:09:54.914 We believe that the prevalence may be

NOTE Confidence: 0.879316136111111  
00:09:54.914 --> 00:09:58.575 similar close to 5% of those conflicts,  
NOTE Confidence: 0.879316136111111  
00:09:58.575 --> 00:10:00.395 hepatitis B and globally.  
NOTE Confidence: 0.879316136111111  
00:10:00.400 --> 00:10:02.850 This amounts to up to 60 million  
NOTE Confidence: 0.879316136111111  
00:10:02.850 --> 00:10:04.858 persons and up to 125,000 persons  
NOTE Confidence: 0.879316136111111  
00:10:04.858 --> 00:10:06.678 here in the United States.  
NOTE Confidence: 0.879316136111111  
00:10:06.680 --> 00:10:07.102 Unfortunately,  
NOTE Confidence: 0.879316136111111  
00:10:07.102 --> 00:10:09.212 our current guidelines do not  
NOTE Confidence: 0.879316136111111  
00:10:09.212 --> 00:10:11.350 recommend screening all HIV infected  
NOTE Confidence: 0.879316136111111  
00:10:11.350 --> 00:10:12.918 individuals for hepatitis delta  
NOTE Confidence: 0.879316136111111  
00:10:12.918 --> 00:10:14.878 in the United States based  
NOTE Confidence: 0.784928345217391  
00:10:14.944 --> 00:10:16.728 on ASLD guidance, but recent.  
NOTE Confidence: 0.784928345217391  
00:10:16.728 --> 00:10:19.486 Updates to the European and the Asian  
NOTE Confidence: 0.784928345217391  
00:10:19.486 --> 00:10:21.786 Pacific guidelines have shifted to  
NOTE Confidence: 0.784928345217391  
00:10:21.786 --> 00:10:24.528 screening all persons with chronic HPV.  
NOTE Confidence: 0.784928345217391  
00:10:24.530 --> 00:10:26.679 We are hopeful that in the next  
NOTE Confidence: 0.784928345217391

00:10:26.679 --> 00:10:28.648 iteration of guidance to United States,

NOTE Confidence: 0.784928345217391

00:10:28.650 --> 00:10:31.158 this may shift to universal testing

NOTE Confidence: 0.784928345217391

00:10:31.158 --> 00:10:32.830 of HIV infected individuals.

NOTE Confidence: 0.784928345217391

00:10:32.830 --> 00:10:34.666 Now, on top of the morbidity

NOTE Confidence: 0.784928345217391

00:10:34.666 --> 00:10:35.890 mortality that we articulate.

NOTE Confidence: 0.784928345217391

00:10:35.890 --> 00:10:37.546 Peptides, B, Delta,

NOTE Confidence: 0.784928345217391

00:10:37.546 --> 00:10:40.306 hepatitis further augments of the

NOTE Confidence: 0.784928345217391

00:10:40.306 --> 00:10:43.166 risk of cirrhosis, liver cancer,

NOTE Confidence: 0.784928345217391

00:10:43.166 --> 00:10:43.922 deliberative mortality.

NOTE Confidence: 0.784928345217391

00:10:43.922 --> 00:10:46.190 We estimate that up to 70%

NOTE Confidence: 0.784928345217391

00:10:46.190 --> 00:10:48.070 of persons with chronic.

NOTE Confidence: 0.784928345217391

00:10:48.070 --> 00:10:49.845 Delta develops cirrhosis within

NOTE Confidence: 0.784928345217391

00:10:49.845 --> 00:10:52.455 10 years of chronic infection and

NOTE Confidence: 0.784928345217391

00:10:52.455 --> 00:10:55.343 therefore is a source with even more

NOTE Confidence: 0.784928345217391

00:10:55.343 --> 00:10:56.931 significant morbidity and mortality.

NOTE Confidence: 0.784928345217391

00:10:56.940 --> 00:10:59.076 We do not currently have a vaccine for

NOTE Confidence: 0.784928345217391

00:10:59.076 --> 00:11:01.337 Delta and there is no FDA approved drug.

NOTE Confidence: 0.784928345217391

00:11:01.340 --> 00:11:03.148 However, Pegylated front is

NOTE Confidence: 0.784928345217391

00:11:03.148 --> 00:11:05.860 used as an off label therapy.

NOTE Confidence: 0.784928345217391

00:11:05.860 --> 00:11:08.394 We are very excited that there are

NOTE Confidence: 0.784928345217391

00:11:08.394 --> 00:11:09.975 several novel investigation agents

NOTE Confidence: 0.784928345217391

00:11:09.975 --> 00:11:12.120 currently in phase three development,

NOTE Confidence: 0.784928345217391

00:11:12.120 --> 00:11:15.368 which may offer new options within next

NOTE Confidence: 0.784928345217391

00:11:15.368 --> 00:11:18.380 several years and then finally peptides.

NOTE Confidence: 0.784928345217391

00:11:18.380 --> 00:11:18.900 E.

NOTE Confidence: 0.784928345217391

00:11:18.900 --> 00:11:21.744 This should be EV where the HAV is.

NOTE Confidence: 0.784928345217391

00:11:21.744 --> 00:11:23.788 A hepatitis is an RNA virus which

NOTE Confidence: 0.784928345217391

00:11:23.788 --> 00:11:25.702 also presents as an acute hepatitis

NOTE Confidence: 0.784928345217391

00:11:25.702 --> 00:11:28.291 with a low rate of fullman impact

NOTE Confidence: 0.784928345217391

00:11:28.291 --> 00:11:30.072 failure estimated about 0.5%.

NOTE Confidence: 0.784928345217391

00:11:30.072 --> 00:11:31.732 The global incidence is actually

NOTE Confidence: 0.784928345217391

00:11:31.732 --> 00:11:34.007 quite high and it's it's certainly  
NOTE Confidence: 0.784928345217391

00:11:34.007 --> 00:11:36.217 underappreciated here in North America,  
NOTE Confidence: 0.784928345217391

00:11:36.220 --> 00:11:38.117 but it may amount to up to  
NOTE Confidence: 0.784928345217391

00:11:38.117 --> 00:11:39.559 20 million cases per year,  
NOTE Confidence: 0.784928345217391

00:11:39.560 --> 00:11:41.468 up to 44,000 deaths.  
NOTE Confidence: 0.784928345217391

00:11:41.468 --> 00:11:42.899 As of 2019,  
NOTE Confidence: 0.784928345217391

00:11:42.900 --> 00:11:44.120 there appears to be endemic  
NOTE Confidence: 0.784928345217391

00:11:44.120 --> 00:11:45.096 and very specific regions,  
NOTE Confidence: 0.784928345217391

00:11:45.100 --> 00:11:48.096 particularly East and South Asia Middle East.  
NOTE Confidence: 0.784928345217391

00:11:48.100 --> 00:11:49.840 Mexico, among other countries.  
NOTE Confidence: 0.784928345217391

00:11:49.840 --> 00:11:53.230 There are six or seven distinct genotypes,  
NOTE Confidence: 0.784928345217391

00:11:53.230 --> 00:11:55.407 four of which are applicable to humans.  
NOTE Confidence: 0.784928345217391

00:11:55.410 --> 00:11:59.770 There are vectors in bore and camel species,  
NOTE Confidence: 0.784928345217391

00:11:59.770 --> 00:12:03.264 and we have shared genetics with  
NOTE Confidence: 0.784928345217391

00:12:03.264 --> 00:12:06.546 hepatitis E genotypes 3 and four,  
NOTE Confidence: 0.784928345217391

00:12:06.550 --> 00:12:08.839 and this is actually a great consequence

NOTE Confidence: 0.784928345217391

00:12:08.839 --> 00:12:10.639 because we recognize that all of

NOTE Confidence: 0.784928345217391

00:12:10.639 --> 00:12:12.403 the case fatality rate is very low.

NOTE Confidence: 0.784928345217391

00:12:12.410 --> 00:12:16.246 Overall, it is extraordinarily high in women.

NOTE Confidence: 0.784928345217391

00:12:16.250 --> 00:12:18.320 In the third trimester pregnancy.

NOTE Confidence: 0.784928345217391

00:12:18.320 --> 00:12:20.707 For whom the case we tolerate is

NOTE Confidence: 0.784928345217391

00:12:20.707 --> 00:12:22.915 estimated to be as high as 25%,

NOTE Confidence: 0.784928345217391

00:12:22.915 --> 00:12:25.285 and this appears to be concentrated

NOTE Confidence: 0.784928345217391

00:12:25.285 --> 00:12:27.250 in genotype 3, hepatitis E.

NOTE Confidence: 0.784928345217391

00:12:27.250 --> 00:12:27.640 Furthermore,

NOTE Confidence: 0.784928345217391

00:12:27.640 --> 00:12:29.980 we are concerned that there have

NOTE Confidence: 0.784928345217391

00:12:29.980 --> 00:12:32.206 been a number of reports of

NOTE Confidence: 0.784928345217391

00:12:32.206 --> 00:12:33.971 chronic form peptides have emerged

NOTE Confidence: 0.784928345217391

00:12:34.039 --> 00:12:35.899 in immune compromised persons,

NOTE Confidence: 0.784928345217391

00:12:35.900 --> 00:12:37.720 namely those post transplant

NOTE Confidence: 0.784928345217391

00:12:37.720 --> 00:12:39.995 HIV infected with low CD,

NOTE Confidence: 0.784928345217391

00:12:40.000 --> 00:12:43.297 4 count and those who have hematological  
NOTE Confidence: 0.784928345217391

00:12:43.297 --> 00:12:44.710 cancers undergoing chemotherapy.  
NOTE Confidence: 0.784928345217391

00:12:44.710 --> 00:12:46.738 And so these are cases that  
NOTE Confidence: 0.784928345217391

00:12:46.738 --> 00:12:47.752 require careful attention.  
NOTE Confidence: 0.784928345217391

00:12:47.760 --> 00:12:48.470 There is no.  
NOTE Confidence: 0.862386508888889

00:12:52.030 --> 00:12:54.478 I'm afraid we need to wrap up very soon.  
NOTE Confidence: 0.7259726933125

00:12:55.010 --> 00:12:57.218 OK, well and so. And finally we do  
NOTE Confidence: 0.7259726933125

00:12:57.218 --> 00:12:59.867 have a treatment in the form of oral,  
NOTE Confidence: 0.7259726933125

00:12:59.870 --> 00:13:02.470 proper variant, and so I'm going to skip  
NOTE Confidence: 0.7259726933125

00:13:02.470 --> 00:13:05.570 here to the very end that we do have  
NOTE Confidence: 0.7259726933125

00:13:05.570 --> 00:13:07.569 articulation of goals for hepatitis  
NOTE Confidence: 0.7259726933125

00:13:07.569 --> 00:13:09.844 elimination in the United States.  
NOTE Confidence: 0.7259726933125

00:13:09.850 --> 00:13:12.490 But this will require multimodal multi  
NOTE Confidence: 0.7259726933125

00:13:12.490 --> 00:13:14.702 stakeholder engagement and and resource  
NOTE Confidence: 0.7259726933125

00:13:14.702 --> 00:13:17.810 allocation for us to achieve this goal.  
NOTE Confidence: 0.7259726933125

00:13:17.810 --> 00:13:18.874 And I believe that.

NOTE Confidence: 0.7259726933125

00:13:18.874 --> 00:13:21.291 The virus for which we think this is most

NOTE Confidence: 0.7259726933125

00:13:21.291 --> 00:13:23.750 feasible in a short entry term is peptide CI.

NOTE Confidence: 0.7259726933125

00:13:23.750 --> 00:13:25.360 Thank you very much for your attention.

NOTE Confidence: 0.7259726933125

00:13:25.360 --> 00:13:27.040 These are my knowledge events.

NOTE Confidence: 0.7259726933125

00:13:27.040 --> 00:13:28.744 I look forward to any questions

NOTE Confidence: 0.7259726933125

00:13:28.744 --> 00:13:29.880 during the cleaning session.

NOTE Confidence: 0.7259726933125

00:13:29.880 --> 00:13:30.350 Thank you.