

WEBVTT

223bdbce-0372-4024-a946-4d80758e3751-0  
00:00:00.130 --> 00:00:04.114  
A webinar at center our  
presentation slides at top right

223bdbce-0372-4024-a946-4d80758e3751-1  
00:00:04.114 --> 00:00:08.169  
as many video have presenting  
speaker Centers for Disease

223bdbce-0372-4024-a946-4d80758e3751-2  
00:00:08.169 --> 00:00:12.363  
control and prevention folic  
acid. The best tool to prevent

223bdbce-0372-4024-a946-4d80758e3751-3  
00:00:12.363 --> 00:00:16.837  
neural tube defects. Presented  
September 14th, 2022 Division of

223bdbce-0372-4024-a946-4d80758e3751-4  
00:00:16.837 --> 00:00:20.612  
Birth Defects and Infant  
Disorders National Center on

223bdbce-0372-4024-a946-4d80758e3751-5  
00:00:20.612 --> 00:00:24.877  
birth defects and developmental  
disabilities. Speaker Amanda

223bdbce-0372-4024-a946-4d80758e3751-6  
00:00:24.877 --> 00:00:29.281  
Cohen, MD, captain USPHS thank  
you for joining today's webinar

223bdbce-0372-4024-a946-4d80758e3751-7  
00:00:29.281 --> 00:00:30.399  
on Bullock acid.

343ab502-79c2-4575-9744-0791a8c39272-0  
00:00:30.490 --> 00:00:34.059  
The best tool to prevent neural  
tube defects. I am Captain

343ab502-79c2-4575-9744-0791a8c39272-1  
00:00:34.059 --> 00:00:37.688  
Amanda Cohen, director of the  
Division of Birth defects and

343ab502-79c2-4575-9744-0791a8c39272-2  
00:00:37.688 --> 00:00:41.379  
infant disorders with CDC's  
National Center on Birth Defects

343ab502-79c2-4575-9744-0791a8c39272-3

00:00:41.379 --> 00:00:45.129  
and developmental disabilities.  
Today, I have the pleasure of

343ab502-79c2-4575-9744-0791a8c39272-4  
00:00:45.129 --> 00:00:48.820  
serving as the moderator of this  
webinar. Next slide agenda.

d7b97b4d-016f-49a7-af37-e637a170elec-0  
00:00:50.400 --> 00:00:53.712  
This webinar will provide a  
review of what we have learned

d7b97b4d-016f-49a7-af37-e637a170elec-1  
00:00:53.712 --> 00:00:56.575  
about folic acid for the  
prevention of neural tube

d7b97b4d-016f-49a7-af37-e637a170elec-2  
00:00:56.575 --> 00:01:00.168  
defects over the past 30 years  
and why it remains the best tool

d7b97b4d-016f-49a7-af37-e637a170elec-3  
00:01:00.168 --> 00:01:03.311  
available to prevent these  
serious birth defects of the

d7b97b4d-016f-49a7-af37-e637a170elec-4  
00:01:03.311 --> 00:01:04.210  
brain and spine.

b7b77c20-be4f-4ae0-bfe8-d8b5fb8d257a-0  
00:01:05.010 --> 00:01:08.791  
We have a panel of experts lined  
up for this webinar. First

b7b77c20-be4f-4ae0-bfe8-d8b5fb8d257a-1  
00:01:08.791 --> 00:01:12.825  
Doctor Karen Remley, director of  
CDC's National Center on Birth

b7b77c20-be4f-4ae0-bfe8-d8b5fb8d257a-2  
00:01:12.825 --> 00:01:15.724  
Defects and Developmental  
Disabilities, and a

b7b77c20-be4f-4ae0-bfe8-d8b5fb8d257a-3  
00:01:15.724 --> 00:01:19.568  
pediatrician, will share a few  
opening remarks. Then Captain

b7b77c20-be4f-4ae0-bfe8-d8b5fb8d257a-4  
00:01:19.568 --> 00:01:23.539  
Jennifer Williams, a nurse at  
the genealogist and team lead of

b7b77c20-be4f-4ae0-bfe8-d8b5fb8d257a-5  
00:01:23.539 --> 00:01:26.942  
CDC's neural tube defects  
surveillance and prevention

b7b77c20-be4f-4ae0-bfe8-d8b5fb8d257a-6  
00:01:26.942 --> 00:01:31.039  
team, will cover folic acid and  
neural tube defects, focusing on

b7b77c20-be4f-4ae0-bfe8-d8b5fb8d257a-7  
00:01:31.039 --> 00:01:35.009  
why folic acid is is only form  
proven for neural tube defects.

alfde6b0-63a1-45d6-b554-f7ed93d908d2-0  
00:01:35.080 --> 00:01:39.158  
Prevention and providing  
recommendations for people with

alfde6b0-63a1-45d6-b554-f7ed93d908d2-1  
00:01:39.158 --> 00:01:40.590  
MTHFR gene variants.

79b70292-3088-4324-bfcb-8d8a32596a48-0  
00:01:41.700 --> 00:01:45.475  
After Captain Williams talk,  
Doctor Shannon Clark, a double

79b70292-3088-4324-bfcb-8d8a32596a48-1  
00:01:45.475 --> 00:01:48.621  
board certified OBGYN and  
maternal fetal medicine

79b70292-3088-4324-bfcb-8d8a32596a48-2  
00:01:48.621 --> 00:01:52.648  
specialist from the University  
of Texas Medical Branch, as well

79b70292-3088-4324-bfcb-8d8a32596a48-3  
00:01:52.648 --> 00:01:56.612  
as the creator of the popular  
blog blog, Babies after 35, will

79b70292-3088-4324-bfcb-8d8a32596a48-4  
00:01:56.612 --> 00:02:00.387  
share her experiences counseling  
patients about neural tube

79b70292-3088-4324-bfcb-8d8a32596a48-5  
00:02:00.387 --> 00:02:04.288  
defect prevention. She will also  
address misinformation about

79b70292-3088-4324-bfcb-8d8a32596a48-6  
00:02:04.288 --> 00:02:08.063

folic acid and how healthcare  
professionals can collaborate

79b70292-3088-4324-bfcb-8d8a32596a48-7  
00:02:08.063 --> 00:02:11.650  
within the healthcare team to  
improve folic acid intake.

07d0d1c5-f9c5-4c7c-8837-b3366929fc3f-0  
00:02:11.730 --> 00:02:13.670  
To prevent neural tube defects.

6438257f-dac8-4052-9bc6-c97205614b98-0  
00:02:14.590 --> 00:02:18.428  
We ask that you submit to your  
questions for the speakers in

6438257f-dac8-4052-9bc6-c97205614b98-1  
00:02:18.428 --> 00:02:22.456  
the zoom question and answer box  
we will address as many of the

6438257f-dac8-4052-9bc6-c97205614b98-2  
00:02:22.456 --> 00:02:26.484  
questions as time permits. After  
all, the presenters have given

6438257f-dac8-4052-9bc6-c97205614b98-3  
00:02:26.484 --> 00:02:29.819  
their talks. Next slide  
disclosures. This webinar is

6438257f-dac8-4052-9bc6-c97205614b98-4  
00:02:29.819 --> 00:02:33.218  
being recorded as enduring  
material for those seeking

6438257f-dac8-4052-9bc6-c97205614b98-5  
00:02:33.218 --> 00:02:34.540  
continuing education.

d5c8b91a-bba7-4045-9fdc-31f44ad85590-0  
00:02:35.260 --> 00:02:39.747  
CDC are planners and presenters  
which to disclose that they have

d5c8b91a-bba7-4045-9fdc-31f44ad85590-1  
00:02:39.747 --> 00:02:44.166  
no financial relationships with  
with ineligible companies whose

d5c8b91a-bba7-4045-9fdc-31f44ad85590-2  
00:02:44.166 --> 00:02:48.515  
primary business is producing  
marketing, selling, reselling or

d5c8b91a-bba7-4045-9fdc-31f44ad85590-3

00:02:48.515 --> 00:02:52.450  
distributing healthcare products  
used by or on patients.

d5c8b91a-bba7-4045-9fdc-31f44ad85590-4  
00:02:52.450 --> 00:02:56.800  
Presentations will not include  
any discussion of the unlabeled

d5c8b91a-bba7-4045-9fdc-31f44ad85590-5  
00:02:56.800 --> 00:03:01.011  
use of a product or a product  
under investigational use. CDC

d5c8b91a-bba7-4045-9fdc-31f44ad85590-6  
00:03:01.011 --> 00:03:04.670  
did not accept financial or in  
kind support from any

d5c8b91a-bba7-4045-9fdc-31f44ad85590-7  
00:03:04.670 --> 00:03:05.430  
ineligible.

b9fa5a4a-94dd-472e-bc2e-a40e27c60f89-0  
00:03:05.500 --> 00:03:08.290  
Company for this continuing  
education activity.

35fcd4a7-ab58-48d4-8b51-a21f175365cd-0  
00:03:09.340 --> 00:03:13.875  
Now I will turn it over to  
doctor Karen Remley, who will

35fcd4a7-ab58-48d4-8b51-a21f175365cd-1  
00:03:13.875 --> 00:03:18.887  
give us some opening remarks. Dr  
Remley Speaker, Karen Remley,

35fcd4a7-ab58-48d4-8b51-a21f175365cd-2  
00:03:18.887 --> 00:03:20.320  
MD, MBA, MPH, FAP.

6ecd27e0-9d94-40d7-96e0-a98daf4a533e-0  
00:03:21.010 --> 00:03:24.931  
Thank you, doctor. Comb. This  
fall marks 30 years since the US

6ecd27e0-9d94-40d7-96e0-a98daf4a533e-1  
00:03:24.931 --> 00:03:28.230  
Public Health Service  
recommended that all women who

6ecd27e0-9d94-40d7-96e0-a98daf4a533e-2  
00:03:28.230 --> 00:03:31.965  
could become pregnant get 400  
micrograms of folic acid each

6ecd27e0-9d94-40d7-96e0-a98daf4a533e-3  
00:03:31.965 --> 00:03:35.140  
day. To prevent neural tube  
defects. This historic

6ecd27e0-9d94-40d7-96e0-a98daf4a533e-4  
00:03:35.140 --> 00:03:39.186  
recommendation was the result of  
public health trailblazers from

6ecd27e0-9d94-40d7-96e0-a98daf4a533e-5  
00:03:39.186 --> 00:03:42.236  
non governmental and  
governmental organizations,

6ecd27e0-9d94-40d7-96e0-a98daf4a533e-6  
00:03:42.236 --> 00:03:46.282  
including the federal Centers of  
Disease Control and Prevention,

6ecd27e0-9d94-40d7-96e0-a98daf4a533e-7  
00:03:46.282 --> 00:03:49.208  
the Food and Drug  
Administration, the National

6ecd27e0-9d94-40d7-96e0-a98daf4a533e-8  
00:03:49.208 --> 00:03:51.200  
Institutes of Health and Health.

f7392781-3aa9-4eee-976a-fd4849cd22d3-0  
00:03:51.270 --> 00:03:55.244  
Resources and Services  
Administration 2 clinical trials

f7392781-3aa9-4eee-976a-fd4849cd22d3-1  
00:03:55.244 --> 00:03:59.644  
in 1991 and 1992 provided the  
evidence base necessary for the

f7392781-3aa9-4eee-976a-fd4849cd22d3-2  
00:03:59.644 --> 00:04:03.619  
United States folic acid  
recommendation for neural tube

f7392781-3aa9-4eee-976a-fd4849cd22d3-3  
00:04:03.619 --> 00:04:06.954  
defects prevention.  
Subsequently, in 1998, FDA

f7392781-3aa9-4eee-976a-fd4849cd22d3-4  
00:04:06.954 --> 00:04:10.503  
mandated folic acid  
fortification of cereal grain

f7392781-3aa9-4eee-976a-fd4849cd22d3-5  
00:04:10.503 --> 00:04:15.045  
products in an effort to ensure

individuals capable of becoming

f7392781-3aa9-4eee-976a-fd4849cd22d3-6  
00:04:15.045 --> 00:04:19.020  
pregnant consume adequate folic  
acid before conception.

7028729f-64a1-4464-8232-2e9aa77acd5d-0  
00:04:19.820 --> 00:04:23.090  
Mandatory folic acid  
fortification in the United

7028729f-64a1-4464-8232-2e9aa77acd5d-1  
00:04:23.090 --> 00:04:27.028  
States has been estimated to  
prevent more than 1300 neural

7028729f-64a1-4464-8232-2e9aa77acd5d-2  
00:04:27.028 --> 00:04:30.833  
tube defects annually and  
provide a cost savings of more

7028729f-64a1-4464-8232-2e9aa77acd5d-3  
00:04:30.833 --> 00:04:33.770  
than \$600 million in direct cost  
each year.

9cb16358-4f8d-4977-98e3-00e93c4f4ae3-0  
00:04:34.910 --> 00:04:38.885  
This impact was recognized as  
one of the top ten public health

9cb16358-4f8d-4977-98e3-00e93c4f4ae3-1  
00:04:38.885 --> 00:04:42.546  
achievements in the United  
States during the first decade

9cb16358-4f8d-4977-98e3-00e93c4f4ae3-2  
00:04:42.546 --> 00:04:45.827  
of the 21st century, and this  
has very personal and

9cb16358-4f8d-4977-98e3-00e93c4f4ae3-3  
00:04:45.827 --> 00:04:49.614  
professional ramifications for  
me as a medical student, the

9cb16358-4f8d-4977-98e3-00e93c4f4ae3-4  
00:04:49.614 --> 00:04:53.526  
very first baby I delivered had  
anencephaly and as I sat with

9cb16358-4f8d-4977-98e3-00e93c4f4ae3-5  
00:04:53.526 --> 00:04:55.420  
the family holding their baby.

c9219bc5-1fad-434d-a53f-e98b0ac81ffe-0

00:04:56.190 --> 00:04:59.518  
Offering with comfort I could.  
We didn't yet know that

c9219bc5-1fad-434d-a53f-e98b0ac81ffe-1  
00:04:59.518 --> 00:05:03.331  
something as straightforward as  
folic acid fortification could

c9219bc5-1fad-434d-a53f-e98b0ac81ffe-2  
00:05:03.331 --> 00:05:06.781  
have such an impact on such  
devastating birth defects. I

c9219bc5-1fad-434d-a53f-e98b0ac81ffe-3  
00:05:06.781 --> 00:05:10.472  
will never forget that day that  
family and their anguish and

c9219bc5-1fad-434d-a53f-e98b0ac81ffe-4  
00:05:10.472 --> 00:05:14.285  
grief, and I am so grateful that  
through science and policy we

c9219bc5-1fad-434d-a53f-e98b0ac81ffe-5  
00:05:14.285 --> 00:05:18.037  
have been able to save countless  
families from days like that

c9219bc5-1fad-434d-a53f-e98b0ac81ffe-6  
00:05:18.037 --> 00:05:18.279  
one.

659646ed-a4d8-4615-b4a7-6b2c75cd57df-0  
00:05:19.180 --> 00:05:22.777  
This month, CDC researchers  
published a 30 year review

659646ed-a4d8-4615-b4a7-6b2c75cd57df-1  
00:05:22.777 --> 00:05:26.898  
article titled Folic Acid and  
the Prevention of Birth Effects,

659646ed-a4d8-4615-b4a7-6b2c75cd57df-2  
00:05:26.898 --> 00:05:30.562  
30 years of opportunity and  
controversies in the annual

659646ed-a4d8-4615-b4a7-6b2c75cd57df-3  
00:05:30.562 --> 00:05:31.020  
review.

706d7645-23f8-4db2-98f0-4c75ab3eaced-0  
00:05:31.680 --> 00:05:35.388  
Of nutrition. It is available  
online and in print for those



706d7645-23f8-4db2-98f0-4c75ab3eaced-1  
00:05:35.388 --> 00:05:39.034  
interested in learning more  
about the impact of folic acid

706d7645-23f8-4db2-98f0-4c75ab3eaced-2  
00:05:39.034 --> 00:05:42.865  
fortification on health outcomes  
over the last three decades,

706d7645-23f8-4db2-98f0-4c75ab3eaced-3  
00:05:42.865 --> 00:05:46.759  
what remains true today, as it  
was 30 years ago, the intake of

706d7645-23f8-4db2-98f0-4c75ab3eaced-4  
00:05:46.759 --> 00:05:50.591  
folic acid before and during  
early pregnancy can help prevent

706d7645-23f8-4db2-98f0-4c75ab3eaced-5  
00:05:50.591 --> 00:05:54.299  
serious birth defects of the  
brain and spine, and it is the

706d7645-23f8-4db2-98f0-4c75ab3eaced-6  
00:05:54.299 --> 00:05:57.760  
only form of folate proven to  
prevent these conditions.

ed2c9e15-27c2-4d67-8aef-6d81459094b9-0  
00:05:58.780 --> 00:06:02.707  
Thank you Doctor Remley for the  
for the welcoming remarks and

ed2c9e15-27c2-4d67-8aef-6d81459094b9-1  
00:06:02.707 --> 00:06:06.444  
the personal impact of the  
impact of folic acid on on your

ed2c9e15-27c2-4d67-8aef-6d81459094b9-2  
00:06:06.444 --> 00:06:09.992  
career as a pediatrician. Our  
next presenter is Captain

ed2c9e15-27c2-4d67-8aef-6d81459094b9-3  
00:06:09.992 --> 00:06:14.173  
Jennifer Williams, who will talk  
to us about what we have learned

ed2c9e15-27c2-4d67-8aef-6d81459094b9-4  
00:06:14.173 --> 00:06:18.164  
from 30 years of recommending  
folic acid. But before her talk,

ed2c9e15-27c2-4d67-8aef-6d81459094b9-5  
00:06:18.164 --> 00:06:22.218

we have a short knowledge check  
about folic acid. Please answer

ed2c9e15-27c2-4d67-8aef-6d81459094b9-6  
00:06:22.218 --> 00:06:26.019  
the three questions that will  
appear on the screen. Captain

ed2c9e15-27c2-4d67-8aef-6d81459094b9-7  
00:06:26.019 --> 00:06:29.630  
Williams will cover the answers  
during her presentation.

2846702e-eb82-4d3f-a36f-33857d7523da-0  
00:06:30.660 --> 00:06:36.141  
Zoom Poll knowledge check.  
Question one neural tube defects

2846702e-eb82-4d3f-a36f-33857d7523da-1  
00:06:36.141 --> 00:06:41.987  
are severe defects of the brain  
and spine due to failure of the

2846702e-eb82-4d3f-a36f-33857d7523da-2  
00:06:41.987 --> 00:06:47.560  
neural tube to close by day of  
blank gestation A14B21C28D35.

78ffd459-4608-4b73-a934-617a52042363-0  
00:06:53.480 --> 00:06:57.740  
Question two, what is the  
recommended daily folic acid

78ffd459-4608-4b73-a934-617a52042363-1  
00:06:57.740 --> 00:07:02.543  
intake for neural tube defects  
prevention for persons capable

78ffd459-4608-4b73-a934-617a52042363-2  
00:07:02.543 --> 00:07:07.268  
of becoming pregnant, including  
those with an MTHFR variant?

78ffd459-4608-4b73-a934-617a52042363-3  
00:07:07.268 --> 00:07:11.606  
A200 micrograms per day, B400  
micrograms per day, C1000

78ffd459-4608-4b73-a934-617a52042363-4  
00:07:11.606 --> 00:07:15.169  
micrograms per day, D2000  
micrograms per day.

1a0a580e-72ae-4893-92ac-fca8fe016ff4-0  
00:07:24.570 --> 00:07:26.869  
I think we'll give you about one  
minute to answer these

1a0a580e-72ae-4893-92ac-fca8fe016ff4-1  
00:07:26.869 --> 00:07:27.280  
questions.

62ce3399-184f-4b51-8ad6-e9c397cecaa3-0  
00:07:28.640 --> 00:07:30.060  
To the best of your knowledge.

f3c04244-40fc-47cd-8064-ca34f17069d4-0  
00:07:32.290 --> 00:07:36.982  
Question three. Which form or  
forms of folate have been

f3c04244-40fc-47cd-8064-ca34f17069d4-1  
00:07:36.982 --> 00:07:42.177  
scientifically proven to prevent  
neural tube defects? A folic

f3c04244-40fc-47cd-8064-ca34f17069d4-2  
00:07:42.177 --> 00:07:47.624  
acid only B5 dash, MTHF only C,  
folic acid, and five dash MTHF D

f3c04244-40fc-47cd-8064-ca34f17069d4-3  
00:07:47.624 --> 00:07:49.300  
all forms of folate.

b9922852-8a66-458f-840d-aa7fd3481489-0  
00:08:07.170 --> 00:08:11.761  
Next slide, National Center on  
birth defects and developmental

b9922852-8a66-458f-840d-aa7fd3481489-1  
00:08:11.761 --> 00:08:15.551  
disabilities. What we have  
learned from 30 years of

b9922852-8a66-458f-840d-aa7fd3481489-2  
00:08:15.551 --> 00:08:20.070  
recommending folic acid speaker  
Jennifer Williams, pH. D MSN,

b9922852-8a66-458f-840d-aa7fd3481489-3  
00:08:20.070 --> 00:08:24.735  
MPH, FNP, Dash BC Captain Usphs  
NTD surveillance and Prevention

b9922852-8a66-458f-840d-aa7fd3481489-4  
00:08:24.735 --> 00:08:29.400  
Team division of birth defects  
and infant disorders Centers for

b9922852-8a66-458f-840d-aa7fd3481489-5  
00:08:29.400 --> 00:08:31.659  
Disease control and prevention.

9682583f-178f-484b-a7ce-ff79169ffc7e-0  
00:08:33.690 --> 00:08:37.316  
Everyone. I will hand it over to  
Captain Jenny Williams, who will

9682583f-178f-484b-a7ce-ff79169ffc7e-1  
00:08:37.316 --> 00:08:38.690  
take it from here. Great.

5aa955f8-9f9e-4252-8ce0-0b208be09113-0  
00:08:39.420 --> 00:08:42.134  
Thanks so much and good  
afternoon. Thank you all for

5aa955f8-9f9e-4252-8ce0-0b208be09113-1  
00:08:42.134 --> 00:08:45.208  
joining our webinar today on  
what we've learned from our 30

5aa955f8-9f9e-4252-8ce0-0b208be09113-2  
00:08:45.208 --> 00:08:48.076  
year history of recommending  
folic acid for neural tube

5aa955f8-9f9e-4252-8ce0-0b208be09113-3  
00:08:48.076 --> 00:08:49.050  
defects prevention.

085ef639-1668-4892-be0b-19e3688757e5-0  
00:08:50.840 --> 00:08:52.450  
Next slide outline.

311f4a76-be38-409a-9936-c53fe4266c39-0  
00:08:54.250 --> 00:08:58.365  
So today we'll talk about the  
background on folic acid and

311f4a76-be38-409a-9936-c53fe4266c39-1  
00:08:58.365 --> 00:09:01.784  
neural tube defects. We'll  
discuss the methylene

311f4a76-be38-409a-9936-c53fe4266c39-2  
00:09:01.784 --> 00:09:06.248  
tetrahydrofolate reductase gene  
variant, abbreviated MTHFR, and

311f4a76-be38-409a-9936-c53fe4266c39-3  
00:09:06.248 --> 00:09:10.853  
folic acid. We'll hit on sources  
of folic acid and NTD prevention

311f4a76-be38-409a-9936-c53fe4266c39-4  
00:09:10.853 --> 00:09:14.620  
strategies. And in with  
addressing some of the common

311f4a76-be38-409a-9936-c53fe4266c39-5  
00:09:14.620 --> 00:09:17.619  
concerns people have regarding  
folic acid.

5d21da12-53df-4fb5-b725-551064174d89-0  
00:09:18.500 --> 00:09:20.530  
So let's start with some of the  
background.

e1a10e06-a25b-47b5-9bed-e0f3e02cd91f-0  
00:09:21.550 --> 00:09:25.280  
Next slide, vitamin B9, folate  
and folic acid.

c575e63e-e190-4ea4-8f7e-9b4bcc3742c0-0  
00:09:26.710 --> 00:09:31.228  
Vitamin B9 is commonly known as  
folate. Folate is an umbrella

c575e63e-e190-4ea4-8f7e-9b4bcc3742c0-1  
00:09:31.228 --> 00:09:35.747  
term used to describe the many  
different forms of vitamin B9,

c575e63e-e190-4ea4-8f7e-9b4bcc3742c0-2  
00:09:35.747 --> 00:09:39.172  
including natural and  
manufactured forms. Some

c575e63e-e190-4ea4-8f7e-9b4bcc3742c0-3  
00:09:39.172 --> 00:09:43.837  
examples of different forms of  
folate are listed on this slide.

c575e63e-e190-4ea4-8f7e-9b4bcc3742c0-4  
00:09:43.837 --> 00:09:47.189  
Food folate, folic acid,  
dihydrofolate or THF

c575e63e-e190-4ea4-8f7e-9b4bcc3742c0-5  
00:09:47.189 --> 00:09:51.781  
tetrahydrofolate, or DHF 5 dash  
methyltetrahydrofolate or five

c575e63e-e190-4ea4-8f7e-9b4bcc3742c0-6  
00:09:51.781 --> 00:09:56.300  
dash MTHF and folate is critical  
to basic cellular processes.

c997c417-bd8e-438e-a9c7-e3db18a17356-0  
00:09:57.000 --> 00:10:00.310  
As with any manufactured  
supplement, folic acid is a

c997c417-bd8e-438e-a9c7-e3db18a17356-1  
00:10:00.310 --> 00:10:03.995

synthetic form of folate that,  
unlike natural food folate,

c997c417-bd8e-438e-a9c7-e3db18a17356-2  
00:10:03.995 --> 00:10:07.805  
which is found in foods like  
leafy green vegetables and some

c997c417-bd8e-438e-a9c7-e3db18a17356-3  
00:10:07.805 --> 00:10:11.552  
fruits, folic acid, is not  
easily degraded by heater light,

c997c417-bd8e-438e-a9c7-e3db18a17356-4  
00:10:11.552 --> 00:10:15.612  
making it a more stable, making  
it more stable than natural food

c997c417-bd8e-438e-a9c7-e3db18a17356-5  
00:10:15.612 --> 00:10:16.050  
folate.

46e3174e-1c00-4b2d-a3a4-aedb8f84c530-0  
00:10:18.210 --> 00:10:21.649  
Next slide, folate metabolism  
and one carbon pathway, a

46e3174e-1c00-4b2d-a3a4-aedb8f84c530-1  
00:10:21.649 --> 00:10:25.334  
graphic shows a curved path  
representing blood flow. At the

46e3174e-1c00-4b2d-a3a4-aedb8f84c530-2  
00:10:25.334 --> 00:10:29.203  
beginning, food enters the gut,  
which transfers folic acid and

46e3174e-1c00-4b2d-a3a4-aedb8f84c530-3  
00:10:29.203 --> 00:10:32.642  
folates into the bloodstream.  
The speaker continues the

46e3174e-1c00-4b2d-a3a4-aedb8f84c530-4  
00:10:32.642 --> 00:10:33.379  
description.

21f1c1f0-4314-4c62-98f5-0930ed277d10-0  
00:10:34.390 --> 00:10:38.292  
Now this is a depiction of those  
basic cellular processes that

21f1c1f0-4314-4c62-98f5-0930ed277d10-1  
00:10:38.292 --> 00:10:42.319  
occur in the body that we talked  
about on the previous slide and

21f1c1f0-4314-4c62-98f5-0930ed277d10-2

00:10:42.319 --> 00:10:45.912  
it represents the folate  
metabolic in one carbon pathway.

21f1c1f0-4314-4c62-98f5-0930ed277d10-3  
00:10:45.912 --> 00:10:49.691  
This graphic traces folate from  
consumption through the body

21f1c1f0-4314-4c62-98f5-0930ed277d10-4  
00:10:49.691 --> 00:10:52.913  
including major organ  
involvement through where the

21f1c1f0-4314-4c62-98f5-0930ed277d10-5  
00:10:52.913 --> 00:10:57.002  
methylation magic happens to how  
folate enters the embryo to what

21f1c1f0-4314-4c62-98f5-0930ed277d10-6  
00:10:57.002 --> 00:11:00.533  
we measure in a person's blood  
to establish their folate

21f1c1f0-4314-4c62-98f5-0930ed277d10-7  
00:11:00.533 --> 00:11:04.126  
status. Now the big take away  
from this slide is that the

21f1c1f0-4314-4c62-98f5-0930ed277d10-8  
00:11:04.126 --> 00:11:04.560  
folate.

e98b6c3f-8c38-482e-9f6a-039ea91fb4e2-0  
00:11:04.640 --> 00:11:08.350  
Pathway is at the center of DNA  
repair and synthesis and is

e98b6c3f-8c38-482e-9f6a-039ea91fb4e2-1  
00:11:08.350 --> 00:11:10.700  
critical for DNA and RNA  
methylation.

654e30c9-ffd7-4754-8fbd-074aa6e8ef87-0  
00:11:11.340 --> 00:11:14.526  
Depicted in the red blood cell  
graphic, you'll see the

654e30c9-ffd7-4754-8fbd-074aa6e8ef87-1  
00:11:14.526 --> 00:11:17.829  
methionine and folate cycle that  
is critical to cellular

654e30c9-ffd7-4754-8fbd-074aa6e8ef87-2  
00:11:17.829 --> 00:11:21.074  
function. Any process that  
requires the body to produce

654e30c9-ffd7-4754-8fbd-074aa6e8ef87-3  
00:11:21.074 --> 00:11:23.160  
cells or repair itself uses  
folate.

bla664c1-d46d-48de-a294-5c3167d09396-0  
00:11:24.220 --> 00:11:27.932  
Now, folate is first absorbed  
primarily from the small

bla664c1-d46d-48de-a294-5c3167d09396-1  
00:11:27.932 --> 00:11:32.116  
intestines via protein, proton  
coupled folate receptors. Once

bla664c1-d46d-48de-a294-5c3167d09396-2  
00:11:32.116 --> 00:11:35.964  
absorbed for Folates reach,  
systemic circulation and are

bla664c1-d46d-48de-a294-5c3167d09396-3  
00:11:35.964 --> 00:11:39.541  
further processed by our  
peripheral tissues absorbed

bla664c1-d46d-48de-a294-5c3167d09396-4  
00:11:39.541 --> 00:11:43.860  
follates are partially processed  
by the liver and in the liver.

bla664c1-d46d-48de-a294-5c3167d09396-5  
00:11:43.860 --> 00:11:47.910  
Folic acid may undergo several  
biotransformation processes,

bla664c1-d46d-48de-a294-5c3167d09396-6  
00:11:47.910 --> 00:11:52.230  
ultimately ending up as a money,  
glutamate 5. Methyl THF. Now 5

bla664c1-d46d-48de-a294-5c3167d09396-7  
00:11:52.230 --> 00:11:55.740  
methyl THF may be partially  
released into the bile.

cb19d623-d5d1-4798-af5a-64db376be414-0  
00:11:55.850 --> 00:11:58.167  
Allowing for further  
reabsorption in the small

cb19d623-d5d1-4798-af5a-64db376be414-1  
00:11:58.167 --> 00:11:58.660  
intestine.

7819cf16-e8fc-4250-8265-96fe66e163ec-0  
00:11:59.790 --> 00:12:03.924



Now the liver also allows for  
long term storage of folates and

7819cf16-e8fc-4250-8265-96fe66e163ec-1  
00:12:03.924 --> 00:12:07.861  
allows for the hydrolysis of  
these stored folates back into

7819cf16-e8fc-4250-8265-96fe66e163ec-2  
00:12:07.861 --> 00:12:11.798  
bioavailable forms, which then  
enter back into the systemic

7819cf16-e8fc-4250-8265-96fe66e163ec-3  
00:12:11.798 --> 00:12:14.030  
circulation via the hepatic  
vein.

f7df7f59-3ffa-4bdd-beea-15e44e808c5a-0  
00:12:14.730 --> 00:12:18.367  
Circulating folates are  
transported from the serum into

f7df7f59-3ffa-4bdd-beea-15e44e808c5a-1  
00:12:18.367 --> 00:12:22.394  
newly created red blood cells in  
the bone marrow via membrane

f7df7f59-3ffa-4bdd-beea-15e44e808c5a-2  
00:12:22.394 --> 00:12:26.226  
associated folate binding  
proteins. Serum folates that are

f7df7f59-3ffa-4bdd-beea-15e44e808c5a-3  
00:12:26.226 --> 00:12:29.864  
not bound to proteins are  
filtered by the kidney folate

f7df7f59-3ffa-4bdd-beea-15e44e808c5a-4  
00:12:29.864 --> 00:12:33.956  
receptor Fr alpha in the kidney  
are highly expressed along the

f7df7f59-3ffa-4bdd-beea-15e44e808c5a-5  
00:12:33.956 --> 00:12:38.048  
tubule epithelial cells allowing  
for efficient reabsorption of

f7df7f59-3ffa-4bdd-beea-15e44e808c5a-6  
00:12:38.048 --> 00:12:41.621  
folates excess folates that  
aren't reabsorbed are then

f7df7f59-3ffa-4bdd-beea-15e44e808c5a-7  
00:12:41.621 --> 00:12:43.179  
eliminated in the urine.

bc3c7cb1-d377-4963-96ef-22739d0215a0-0  
00:12:43.920 --> 00:12:47.071  
In pregnant women, Fr Alpha  
receptors are also highly

bc3c7cb1-d377-4963-96ef-22739d0215a0-1  
00:12:47.071 --> 00:12:50.865  
expressed in the placenta, which  
allows for nutritional transfer

bc3c7cb1-d377-4963-96ef-22739d0215a0-2  
00:12:50.865 --> 00:12:53.550  
of folates to the fetus  
throughout pregnancy.

fac96348-8232-4279-b9ae-edfc2f453d11-0  
00:12:54.710 --> 00:12:58.224  
Red blood cell and serum folate  
measurements reflect these

fac96348-8232-4279-b9ae-edfc2f453d11-1  
00:12:58.224 --> 00:13:00.250  
biological processing of  
folates.

7690b833-d02f-4fbd-888c-a9cdfe6caf4c-0  
00:13:03.480 --> 00:13:07.197  
Next slide, neural tube defects  
were anti DA graphic shows a

7690b833-d02f-4fbd-888c-a9cdfe6caf4c-1  
00:13:07.197 --> 00:13:11.096  
cross section of a neural tube  
highlighting different parts and

7690b833-d02f-4fbd-888c-a9cdfe6caf4c-2  
00:13:11.096 --> 00:13:14.813  
showing pictures of infants born  
with corresponding defects.

7690b833-d02f-4fbd-888c-a9cdfe6caf4c-3  
00:13:14.813 --> 00:13:18.287  
There are 3000 neural tube  
defect cases each year in the

7690b833-d02f-4fbd-888c-a9cdfe6caf4c-4  
00:13:18.287 --> 00:13:18.470  
US.

93335221-11e7-4a48-bfaa-5770d73373bb-0  
00:13:19.460 --> 00:13:23.109  
So now that we've talked about  
how how folate is processed in

93335221-11e7-4a48-bfaa-5770d73373bb-1  
00:13:23.109 --> 00:13:26.759  
the body and before we delve

deeper into the history of folio

93335221-11e7-4a48-bfaa-5770d73373bb-2  
00:13:26.759 --> 00:13:30.291  
acid success in preventing  
neural tube defects, let's touch

93335221-11e7-4a48-bfaa-5770d73373bb-3  
00:13:30.291 --> 00:13:33.824  
a little bit on neural tube  
defects themselves. Neural tube

93335221-11e7-4a48-bfaa-5770d73373bb-4  
00:13:33.824 --> 00:13:37.473  
defects are severe birth defects  
of the brain, and the spine,

93335221-11e7-4a48-bfaa-5770d73373bb-5  
00:13:37.473 --> 00:13:41.123  
which are caused by failure of  
the neural tube to close 85 to

93335221-11e7-4a48-bfaa-5770d73373bb-6  
00:13:41.123 --> 00:13:44.832  
90% of neural tube defects will  
either be anencephaly or spina

93335221-11e7-4a48-bfaa-5770d73373bb-7  
00:13:44.832 --> 00:13:48.659  
bifida. However, there are some  
less common entity presentations

93335221-11e7-4a48-bfaa-5770d73373bb-8  
00:13:48.659 --> 00:13:49.130  
as well.

421f023a-303c-4983-92f1-5100fcd6b3dd-0  
00:13:49.630 --> 00:13:53.414  
And and Stephanie is uniformly  
fatal. Spina bifida is a

421f023a-303c-4983-92f1-5100fcd6b3dd-1  
00:13:53.414 --> 00:13:56.793  
frequently occurring,  
permanently disabling birth

421f023a-303c-4983-92f1-5100fcd6b3dd-2  
00:13:56.793 --> 00:14:01.117  
defect. The lifetime direct cost  
of care for an individual with

421f023a-303c-4983-92f1-5100fcd6b3dd-3  
00:14:01.117 --> 00:14:05.442  
spina bifida is estimated to be  
at approximately \$792,000. Now,

421f023a-303c-4983-92f1-5100fcd6b3dd-4

00:14:05.442 --> 00:14:09.497  
this is probably just the tip of  
the iceberg, as it doesn't

421f023a-303c-4983-92f1-5100fcd6b3dd-5  
00:14:09.497 --> 00:14:13.754  
measure indirect costs, such as  
quality of life or the social,

421f023a-303c-4983-92f1-5100fcd6b3dd-6  
00:14:13.754 --> 00:14:17.809  
emotional, and family impacts.  
So one of the most important

421f023a-303c-4983-92f1-5100fcd6b3dd-7  
00:14:17.809 --> 00:14:20.580  
facts to take away from today's  
webinar.

71399a81-7e5d-433b-9dab-123d365d123c-0  
00:14:20.650 --> 00:14:24.273  
Is that prevention has to happen  
early as the neural tube

71399a81-7e5d-433b-9dab-123d365d123c-1  
00:14:24.273 --> 00:14:26.960  
finishes formation by day 28 of  
gestation.

88419713-7279-4206-89c8-8c694510886f-0  
00:14:29.530 --> 00:14:33.000  
Next slide, development of  
neural tube. During first

88419713-7279-4206-89c8-8c694510886f-1  
00:14:33.000 --> 00:14:36.864  
trimester, a chart outlines the  
basic systems of embryonic

88419713-7279-4206-89c8-8c694510886f-2  
00:14:36.864 --> 00:14:40.400  
development into the fetal.  
Measured in weeks such as

88419713-7279-4206-89c8-8c694510886f-3  
00:14:40.400 --> 00:14:44.592  
central nervous system in weeks  
3 through 25 and heart in weeks

88419713-7279-4206-89c8-8c694510886f-4  
00:14:44.592 --> 00:14:47.931  
3 through 5 1/2. The chart  
timeline begins at last

88419713-7279-4206-89c8-8c694510886f-5  
00:14:47.931 --> 00:14:52.188  
menstrual period as -, 2 weeks,

then conception as week one. The

88419713-7279-4206-89c8-8c694510886f-6  
00:14:52.188 --> 00:14:55.070  
neural tube is closed by week  
four, day 28.

83815642-f19f-42bd-874f-43ac666982d1-0  
00:14:55.890 --> 00:14:58.897  
So I want to emphasize again  
this critical window of

83815642-f19f-42bd-874f-43ac666982d1-1  
00:14:58.897 --> 00:15:02.472  
embryonic development in order  
to highlight how crucial timing

83815642-f19f-42bd-874f-43ac666982d1-2  
00:15:02.472 --> 00:15:05.990  
of entity prevention strategies  
are, as shown in the graphic,

83815642-f19f-42bd-874f-43ac666982d1-3  
00:15:05.990 --> 00:15:09.395  
the neural tube begins forming  
within the first few days of

83815642-f19f-42bd-874f-43ac666982d1-4  
00:15:09.395 --> 00:15:12.460  
conception and is completely  
done by four weeks after

83815642-f19f-42bd-874f-43ac666982d1-5  
00:15:12.460 --> 00:15:15.978  
conception. That neural tube  
formation occurs prior to when a

83815642-f19f-42bd-874f-43ac666982d1-6  
00:15:15.978 --> 00:15:19.099  
person will experience that  
missed. If a person is not

83815642-f19f-42bd-874f-43ac666982d1-7  
00:15:19.099 --> 00:15:22.390  
planning for pregnancy or if  
they have irregular periods,

83815642-f19f-42bd-874f-43ac666982d1-8  
00:15:22.390 --> 00:15:25.909  
they may not realize they're  
pregnant for several weeks after

83815642-f19f-42bd-874f-43ac666982d1-9  
00:15:25.909 --> 00:15:26.589  
neural tube.

d7b5c467-9dd9-4570-a1fc-8591715e8f17-0

00:15:26.660 --> 00:15:30.246  
Closure. So in other words, if  
you're waiting until the time a

d7b5c467-9dd9-4570-a1fc-8591715e8f17-1  
00:15:30.246 --> 00:15:33.321  
person finds out they're  
pregnant, the neural tube is

d7b5c467-9dd9-4570-a1fc-8591715e8f17-2  
00:15:33.321 --> 00:15:36.510  
already closed, and with it, our  
window for prevention.

21b2fcec-98de-4bdf-86fd-633f962ab811-0  
00:15:38.050 --> 00:15:41.240  
Next slide, risk factors of  
neural tube defects.

427e5b27-f87b-4290-a690-f52584dac6a8-0  
00:15:42.260 --> 00:15:45.662  
So before we can talk about  
prevention, we also need to

427e5b27-f87b-4290-a690-f52584dac6a8-1  
00:15:45.662 --> 00:15:49.186  
understand a little bit about  
risk factors, the causes of

427e5b27-f87b-4290-a690-f52584dac6a8-2  
00:15:49.186 --> 00:15:52.892  
NTD's are multifactorial and  
they incorporate our genes, our

427e5b27-f87b-4290-a690-f52584dac6a8-3  
00:15:52.892 --> 00:15:56.841  
behaviors in the environment on  
this slide are some of the known

427e5b27-f87b-4290-a690-f52584dac6a8-4  
00:15:56.841 --> 00:16:00.304  
genetic and non genetic causes  
of in TD's. And women can

427e5b27-f87b-4290-a690-f52584dac6a8-5  
00:16:00.304 --> 00:16:03.949  
certainly have more than one of  
these risk factors. Genetic

427e5b27-f87b-4290-a690-f52584dac6a8-6  
00:16:03.949 --> 00:16:07.169  
causes include single gene  
disorders and chromosomal

427e5b27-f87b-4290-a690-f52584dac6a8-7  
00:16:07.169 --> 00:16:10.511  
disorders, non genetic causes

and risk factors include

427e5b27-f87b-4290-a690-f52584dac6a8-8  
00:16:10.511 --> 00:16:12.029  
medication use, diabetes.

86f5aa16-99cb-4c1e-9dc4-88fd8ff1617e-0  
00:16:12.200 --> 00:16:16.201  
Obesity, hyperthermia, race or  
ethnicity? Environmental toxins,

86f5aa16-99cb-4c1e-9dc4-88fd8ff1617e-1  
00:16:16.201 --> 00:16:19.827  
vitamin B12 deficiency, and  
folate insufficiency. Many of

86f5aa16-99cb-4c1e-9dc4-88fd8ff1617e-2  
00:16:19.827 --> 00:16:23.453  
these risk factors interact with  
folate and are therefore

86f5aa16-99cb-4c1e-9dc4-88fd8ff1617e-3  
00:16:23.453 --> 00:16:27.391  
modifiable, meaning that we can  
mitigate multiple risk factors

86f5aa16-99cb-4c1e-9dc4-88fd8ff1617e-4  
00:16:27.391 --> 00:16:29.830  
through adequate intake of folic  
acid.

8aefefdc-e390-4c17-9e00-e280476d6179-0  
00:16:30.940 --> 00:16:34.225  
It's important to note that  
these risk factors are not

8aefefdc-e390-4c17-9e00-e280476d6179-1  
00:16:34.225 --> 00:16:37.630  
distributed equally across  
racial and ethnic groups. For

8aefefdc-e390-4c17-9e00-e280476d6179-2  
00:16:37.630 --> 00:16:41.513  
example, there's a differential  
distribution of the folate MTHFR

8aefefdc-e390-4c17-9e00-e280476d6179-3  
00:16:41.513 --> 00:16:45.038  
polymorphism that we'll be  
talking about a little later on

8aefefdc-e390-4c17-9e00-e280476d6179-4  
00:16:45.038 --> 00:16:48.861  
across the different racial and  
ethnic groups. Another example,

8aefefdc-e390-4c17-9e00-e280476d6179-5

00:16:48.861 --> 00:16:52.266  
people living in lower resource  
settings might have more

8aefefdc-e390-4c17-9e00-e280476d6179-6  
00:16:52.266 --> 00:16:55.731  
exposures to environmental  
toxins like letter arsenic, or

8aefefdc-e390-4c17-9e00-e280476d6179-7  
00:16:55.731 --> 00:16:59.315  
maybe they have less access to  
micronutrient rich foods and

8aefefdc-e390-4c17-9e00-e280476d6179-8  
00:16:59.315 --> 00:17:00.630  
supplements therefore.

e11866b1-ad6b-41f0-b8de-d9a6d8f2889e-0  
00:17:00.700 --> 00:17:04.740  
Much of our risk factor work in  
the center centers around.

5c296e13-2982-4114-8dac-e405e7f254e3-0  
00:17:06.300 --> 00:17:08.280  
It's really grounded in our  
HealthEquity.

938a5d7a-c89b-45ed-9691-1fffd6feaa89a-0  
00:17:11.030 --> 00:17:14.869  
Next slide, randomized control  
trials, or RCT, demonstrate

938a5d7a-c89b-45ed-9691-1fffd6feaa89a-1  
00:17:14.869 --> 00:17:18.969  
folic acid prevents neural tube  
defects. First paper discussed

938a5d7a-c89b-45ed-9691-1fffd6feaa89a-2  
00:17:18.969 --> 00:17:23.263  
was published in The Lancet July  
20th, 1991, titled Prevention of

938a5d7a-c89b-45ed-9691-1fffd6feaa89a-3  
00:17:23.263 --> 00:17:27.233  
Neural Tube Defects. Results of  
the Medical Research Council

938a5d7a-c89b-45ed-9691-1fffd6feaa89a-4  
00:17:27.233 --> 00:17:31.007  
vitamin study second paper  
discussed was published in the

938a5d7a-c89b-45ed-9691-1fffd6feaa89a-5  
00:17:31.007 --> 00:17:34.977  
New England Journal of Medicine,  
December 24th, 1992, titled



938a5d7a-c89b-45ed-9691-1fffd6feaa89a-6  
00:17:34.977 --> 00:17:38.230  
Prevention of the First  
occurrence of neural tube

938a5d7a-c89b-45ed-9691-1fffd6feaa89a-7  
00:17:38.230 --> 00:17:41.810  
defects by Peric conceptional  
vitamin supplementation.

afa26b26-02bc-4128-8e29-b5729da59286-0  
00:17:42.760 --> 00:17:46.731  
So before we go further, I do  
want to take a step, take a step

afa26b26-02bc-4128-8e29-b5729da59286-1  
00:17:46.731 --> 00:17:50.008  
back and focus on those first  
studies examining the

afa26b26-02bc-4128-8e29-b5729da59286-2  
00:17:50.008 --> 00:17:54.042  
relationship between folic acid  
and neural tube defects. In the

afa26b26-02bc-4128-8e29-b5729da59286-3  
00:17:54.042 --> 00:17:57.635  
1990s, there were two papers  
that showed that folic acid

afa26b26-02bc-4128-8e29-b5729da59286-4  
00:17:57.635 --> 00:18:01.354  
supplementation could prevent  
neural tube defects. The 1st

afa26b26-02bc-4128-8e29-b5729da59286-5  
00:18:01.354 --> 00:18:05.325  
paper was in 1991, and what it  
showed was that 4000 micrograms

afa26b26-02bc-4128-8e29-b5729da59286-6  
00:18:05.325 --> 00:18:08.918  
a day of folic acid reduced  
recurrence of NTD's in women

afa26b26-02bc-4128-8e29-b5729da59286-7  
00:18:08.918 --> 00:18:12.574  
with a previous NTD affected  
pregnancy. The 2nd paper the

afa26b26-02bc-4128-8e29-b5729da59286-8  
00:18:12.574 --> 00:18:13.520  
following year.

17ea7de0-b3c1-4d35-93ff-a5cb742068a5-0  
00:18:13.590 --> 00:18:17.600

Showed that 800 micrograms a day  
of folic acid in a multivitamin

17ea7de0-b3c1-4d35-93ff-a5cb742068a5-1  
00:18:17.600 --> 00:18:21.486  
helped prevent all neural tube  
defects in a group of women who

17ea7de0-b3c1-4d35-93ff-a5cb742068a5-2  
00:18:21.486 --> 00:18:24.510  
had never had a previous NTD  
affected pregnancy.

c8dc0a73-15d4-44d5-b48c-44af0f049efb-0  
00:18:26.030 --> 00:18:30.429  
Next slide, evidence from CDC  
community trial, China 1993 to

c8dc0a73-15d4-44d5-b48c-44af0f049efb-1  
00:18:30.429 --> 00:18:34.756  
1996. A bar graph shows the  
neural tube defects per 10,000

c8dc0a73-15d4-44d5-b48c-44af0f049efb-2  
00:18:34.756 --> 00:18:39.155  
cases in northern and southern  
China. In the North, no folic

c8dc0a73-15d4-44d5-b48c-44af0f049efb-3  
00:18:39.155 --> 00:18:43.627  
acid intervention resulted in 48  
anti de instances per 10,000

c8dc0a73-15d4-44d5-b48c-44af0f049efb-4  
00:18:43.627 --> 00:18:48.026  
cases versus 7 instances with  
folic acid intervention in the

c8dc0a73-15d4-44d5-b48c-44af0f049efb-5  
00:18:48.026 --> 00:18:51.848  
South. No folic acid  
intervention resulted in 10 NTD

c8dc0a73-15d4-44d5-b48c-44af0f049efb-6  
00:18:51.848 --> 00:18:55.959  
instances per 10,000 cases  
versus 6 instances with folic

c8dc0a73-15d4-44d5-b48c-44af0f049efb-7  
00:18:55.959 --> 00:18:56.320  
acid.

f05e322b-f1c7-4edb-a467-08bc0d8c0271-0  
00:18:56.390 --> 00:18:57.170  
Intervention.

1d349075-3503-4b12-bfb5-388c44ad79bd-0

00:18:58.380 --> 00:19:01.294  
Now, following these two  
landmark studies, the CDC

1d349075-3503-4b12-bfb5-388c44ad79bd-1  
00:19:01.294 --> 00:19:04.667  
conducted the China community  
trial from 1993 to 1996. The

1d349075-3503-4b12-bfb5-388c44ad79bd-2  
00:19:04.667 --> 00:19:07.696  
China community trial was  
conducted in two different

1d349075-3503-4b12-bfb5-388c44ad79bd-3  
00:19:07.696 --> 00:19:11.068  
regions of the country in the  
northern part of the country

1d349075-3503-4b12-bfb5-388c44ad79bd-4  
00:19:11.068 --> 00:19:14.555  
that had lots of NTD affected  
pregnancies and the South that

1d349075-3503-4b12-bfb5-388c44ad79bd-5  
00:19:14.555 --> 00:19:18.098  
was considered more moderate  
risk. Women were enrolled during

1d349075-3503-4b12-bfb5-388c44ad79bd-6  
00:19:18.098 --> 00:19:21.756  
their premarital examination and  
they were given 400 micrograms

1d349075-3503-4b12-bfb5-388c44ad79bd-7  
00:19:21.756 --> 00:19:24.100  
of folic acid daily as the  
intervention.

2cfb6ebc-acaa-478a-afda-c3566c8bfbdb-0  
00:19:25.880 --> 00:19:30.002  
As seen in the graph 400  
micrograms a day of folic acid

2cfb6ebc-acaa-478a-afda-c3566c8bfbdb-1  
00:19:30.002 --> 00:19:34.493  
alone helps significantly reduce  
the rate of in TD's, but it

2cfb6ebc-acaa-478a-afda-c3566c8bfbdb-2  
00:19:34.493 --> 00:19:39.132  
didn't prevent all occurrences  
in the high risk N NTD risk was

2cfb6ebc-acaa-478a-afda-c3566c8bfbdb-3  
00:19:39.132 --> 00:19:43.181  
reduced by 85% down to 7 per

10,000 births, and in the

2cfb6ebc-acaa-478a-afda-c3566c8bfbdb-4  
00:19:43.181 --> 00:19:47.156  
moderate risk S entity  
prevalence was reduced by 40%,

2cfb6ebc-acaa-478a-afda-c3566c8bfbdb-5  
00:19:47.156 --> 00:19:51.868  
down to six per 10,000 births.  
Now what this landmark study did

2cfb6ebc-acaa-478a-afda-c3566c8bfbdb-6  
00:19:51.868 --> 00:19:55.550  
was show that 400 micrograms a  
day of folic acid.

a3db13e2-cdc3-4b60-9058-0c7d2452d51f-0  
00:19:55.640 --> 00:19:58.750  
Alone could reduce most risk for  
NCD's.

faec59eb-4260-4b93-a4c5-cabbdf6b3f3f-0  
00:20:02.020 --> 00:20:04.932  
Next slide, folic acid  
recommendations and

faec59eb-4260-4b93-a4c5-cabbdf6b3f3f-1  
00:20:04.932 --> 00:20:06.490  
fortification policies.

77cf180c-8588-46e4-add8-b2253c801bc9-0  
00:20:07.310 --> 00:20:11.564  
So I wanted you to have a slide  
with all the domestic folic acid

77cf180c-8588-46e4-add8-b2253c801bc9-1  
00:20:11.564 --> 00:20:14.837  
recommendations and  
fortification policies in one

77cf180c-8588-46e4-add8-b2253c801bc9-2  
00:20:14.837 --> 00:20:18.568  
place. In 1991, CDC recommended  
that all women who had a

77cf180c-8588-46e4-add8-b2253c801bc9-3  
00:20:18.568 --> 00:20:22.758  
previous NTD affected pregnancy  
take folic acid before becoming

77cf180c-8588-46e4-add8-b2253c801bc9-4  
00:20:22.758 --> 00:20:26.293  
pregnant again to prevent  
recurrence. In 1992, the US

77cf180c-8588-46e4-add8-b2253c801bc9-5

00:20:26.293 --> 00:20:29.762  
Public Health Service  
recommended that all women who

77cf180c-8588-46e4-add8-b2253c801bc9-6  
00:20:29.762 --> 00:20:33.820  
could become pregnant get 400  
micrograms each day for primary

77cf180c-8588-46e4-add8-b2253c801bc9-7  
00:20:33.820 --> 00:20:35.130  
prevention of MTD's.

930c0baa-5388-47bb-9841-b2786205945e-0  
00:20:35.890 --> 00:20:39.793  
In 1998, the IOM's Food and  
Nutrition Board put forth their

930c0baa-5388-47bb-9841-b2786205945e-1  
00:20:39.793 --> 00:20:44.022  
recommendation that women should  
get 400 micrograms each day, in

930c0baa-5388-47bb-9841-b2786205945e-2  
00:20:44.022 --> 00:20:47.795  
addition to consuming folate  
rich foods from a very diet.

930c0baa-5388-47bb-9841-b2786205945e-3  
00:20:47.795 --> 00:20:51.113  
This is the same year that FDA  
mandated folic acid

930c0baa-5388-47bb-9841-b2786205945e-4  
00:20:51.113 --> 00:20:54.887  
fortification of enriched cereal  
grain products, but they

930c0baa-5388-47bb-9841-b2786205945e-5  
00:20:54.887 --> 00:20:59.116  
excluded corn masa flour at that  
time. It wouldn't be until 2016

930c0baa-5388-47bb-9841-b2786205945e-6  
00:20:59.116 --> 00:21:03.150  
that voluntary fortification was  
allowed for corn masa flour.

b9aa8eaa-f971-4973-bd28-d4b20a8048d4-0  
00:21:04.130 --> 00:21:08.266  
In 2017, the US Preventive  
Services Task Force reviewed and

b9aa8eaa-f971-4973-bd28-d4b20a8048d4-1  
00:21:08.266 --> 00:21:12.334  
updated its recommendation for  
folic acid supplements. New

b9aa8eaa-f971-4973-bd28-d4b20a8048d4-2  
00:21:12.334 --> 00:21:16.539  
recommendation is 400 to 800  
micrograms per day. Next slide,

b9aa8eaa-f971-4973-bd28-d4b20a8048d4-3  
00:21:16.539 --> 00:21:19.780  
methylene tetrahydrofolate  
reductase or MTHFR.

6e69653e-e4fd-4a51-bc3e-2256141d5e72-0  
00:21:22.040 --> 00:21:25.388  
So now we're going to switch  
gears and talk a little bit

6e69653e-e4fd-4a51-bc3e-2256141d5e72-1  
00:21:25.388 --> 00:21:27.620  
about the about MTHFR and folic  
acid.

49f5395a-181c-46dd-a823-8768787da583-0  
00:21:29.090 --> 00:21:34.020  
So when you hear the term MTHFR,  
what exactly does that mean? The

49f5395a-181c-46dd-a823-8768787da583-1  
00:21:34.020 --> 00:21:38.726  
MTHFR gene encodes for the MTHFR  
protein, which helps the body

49f5395a-181c-46dd-a823-8768787da583-2  
00:21:38.726 --> 00:21:43.432  
process folate. Specifically,  
it's important to the one carbon

49f5395a-181c-46dd-a823-8768787da583-3  
00:21:43.432 --> 00:21:47.466  
pathway that we reviewed  
earlier. MTHFR catalyzes the

49f5395a-181c-46dd-a823-8768787da583-4  
00:21:47.466 --> 00:21:52.321  
conversion of 510 methylene THF  
to five methyl THF, which serves

49f5395a-181c-46dd-a823-8768787da583-5  
00:21:52.321 --> 00:21:56.953  
as a carbon donor in the vitamin  
B12. Defendant conversion of

49f5395a-181c-46dd-a823-8768787da583-6  
00:21:56.953 --> 00:21:58.970  
homocysteine to methionine.

b6f4feeb-dc0f-4287-b432-e51fdbb67e45-0  
00:21:59.790 --> 00:22:03.610

MTHFR, as we mentioned earlier,  
plays a critical role in DNA

b6f4feeb-dc0f-4287-b432-e51fdbb67e45-1  
00:22:03.610 --> 00:22:07.180  
methylation as well as DNA and  
RNA synthesis and repair.

5090cf1e-8351-40c8-a66e-d9952d490437-0  
00:22:07.960 --> 00:22:12.968  
Now each person has 2 copies of  
the MTHFR gene, and you'll see

5090cf1e-8351-40c8-a66e-d9952d490437-1  
00:22:12.968 --> 00:22:17.977  
that expressed as MTHFR 6-7 CC  
or MTHFR C for short. But MTHFR

5090cf1e-8351-40c8-a66e-d9952d490437-2  
00:22:17.977 --> 00:22:22.111  
gene variants are very common  
and they will vary by

5090cf1e-8351-40c8-a66e-d9952d490437-3  
00:22:22.111 --> 00:22:26.563  
population. A family tree  
details the genotypes for the

5090cf1e-8351-40c8-a66e-d9952d490437-4  
00:22:26.563 --> 00:22:31.571  
MTHFR C677T variant, grandmother  
CT and Grandfather C produce,

5090cf1e-8351-40c8-a66e-d9952d490437-5  
00:22:31.571 --> 00:22:36.739  
Uncle CC and mother CT mother CT  
and Father CT produced daughter

5090cf1e-8351-40c8-a66e-d9952d490437-6  
00:22:36.739 --> 00:22:38.170  
TT Son CT and Sun.

faf239a3-c849-4e68-b4d3-cf49e973db6e-0  
00:22:38.250 --> 00:22:42.805  
DT in general, individuals with  
variants have just a slightly

faf239a3-c849-4e68-b4d3-cf49e973db6e-1  
00:22:42.805 --> 00:22:47.581  
reduced capacity for processing  
folate. For example, people with

faf239a3-c849-4e68-b4d3-cf49e973db6e-2  
00:22:47.581 --> 00:22:51.842  
the MTHFR TT genotype have an  
average amount of folate in

faf239a3-c849-4e68-b4d3-cf49e973db6e-3  
00:22:51.842 --> 00:22:56.030  
their blood. That's only  
slightly lower, about 16% lower

faf239a3-c849-4e68-b4d3-cf49e973db6e-4  
00:22:56.030 --> 00:22:58.970  
than people with the MTHFR CC  
genotype.

1e3881e0-7183-4d9f-ac60-3f413e20ac8e-0  
00:22:59.620 --> 00:23:03.192  
Now, as I mentioned earlier,  
some variants are more common in

1e3881e0-7183-4d9f-ac60-3f413e20ac8e-1  
00:23:03.192 --> 00:23:06.650  
certain races and ethnicities  
than in others. For instance,

1e3881e0-7183-4d9f-ac60-3f413e20ac8e-2  
00:23:06.650 --> 00:23:10.223  
Hispanic individuals are more  
likely than non Hispanic whites

1e3881e0-7183-4d9f-ac60-3f413e20ac8e-3  
00:23:10.223 --> 00:23:13.565  
or non Hispanic blacks to have  
MTHFR TT variant. But rest

1e3881e0-7183-4d9f-ac60-3f413e20ac8e-4  
00:23:13.565 --> 00:23:17.368  
assured, no matter what genotype  
your patient has, you can assure

1e3881e0-7183-4d9f-ac60-3f413e20ac8e-5  
00:23:17.368 --> 00:23:20.480  
them that folic acid in  
recommended doses is safe and

1e3881e0-7183-4d9f-ac60-3f413e20ac8e-6  
00:23:20.480 --> 00:23:23.650  
essential for all persons  
capable of getting pregnant.

dba994d3-8724-4c4a-a8b4-d8b58a146530-0  
00:23:24.620 --> 00:23:28.560  
Now, while these individuals may  
have a slightly reduced capacity

dba994d3-8724-4c4a-a8b4-d8b58a146530-1  
00:23:28.560 --> 00:23:32.142  
of processing folate, they  
ultimately have no difficulty in

dba994d3-8724-4c4a-a8b4-d8b58a146530-2  
00:23:32.142 --> 00:23:35.903



safely processing and utilizing  
all types of folate, including

dba994d3-8724-4c4a-a8b4-d8b58a146530-3  
00:23:35.903 --> 00:23:36.560  
folic acid.

06dde2a3-ab4f-42dd-bbdb-9a6ca6d343b1-0  
00:23:39.020 --> 00:23:42.920  
Next slide, clinical  
significance of MTHFR variant.

cb2046ca-ca87-4879-9ecc-8da30a4bd130-0  
00:23:43.690 --> 00:23:47.638  
So the recommendation of 400  
micrograms daily for all persons

cb2046ca-ca87-4879-9ecc-8da30a4bd130-1  
00:23:47.638 --> 00:23:51.014  
capable of pregnancy uses the  
term, all because this

cb2046ca-ca87-4879-9ecc-8da30a4bd130-2  
00:23:51.014 --> 00:23:54.708  
recommendation is truly for all,  
regardless of your MTHFR

cb2046ca-ca87-4879-9ecc-8da30a4bd130-3  
00:23:54.708 --> 00:23:58.656  
variant, there is no change to  
the recommendation or clinical

cb2046ca-ca87-4879-9ecc-8da30a4bd130-4  
00:23:58.656 --> 00:24:02.414  
significance. Now what this  
graph is, it's from a study of

cb2046ca-ca87-4879-9ecc-8da30a4bd130-5  
00:24:02.414 --> 00:24:05.981  
women who consume different  
doses of folic acid for six

cb2046ca-ca87-4879-9ecc-8da30a4bd130-6  
00:24:05.981 --> 00:24:09.674  
months, they either took 100  
micrograms of folic acid, or

cb2046ca-ca87-4879-9ecc-8da30a4bd130-7  
00:24:09.674 --> 00:24:12.923  
they took 400 micrograms of  
folic acid. Women were

cb2046ca-ca87-4879-9ecc-8da30a4bd130-8  
00:24:12.923 --> 00:24:13.560  
genotyped.

6481b44b-b51f-4079-af29-28654f1cbb52-0

00:24:13.820 --> 00:24:18.056  
For the MTHFR and they were  
grouped into CC and the variants

6481b44b-b51f-4079-af29-28654f1cbb52-1  
00:24:18.056 --> 00:24:22.223  
CT&T blood samples were  
taken at baseline, then 1/3 and

6481b44b-b51f-4079-af29-28654f1cbb52-2  
00:24:22.223 --> 00:24:26.181  
six months of folic acid  
supplementation, and then three

6481b44b-b51f-4079-af29-28654f1cbb52-3  
00:24:26.181 --> 00:24:30.417  
months after stopping. So we  
looked at which groups of women

6481b44b-b51f-4079-af29-28654f1cbb52-4  
00:24:30.417 --> 00:24:34.167  
would meet the optimal blood  
folate threshold for NTD

6481b44b-b51f-4079-af29-28654f1cbb52-5  
00:24:34.167 --> 00:24:38.612  
prevention, which is represented  
by the green horizontal bar on

6481b44b-b51f-4079-af29-28654f1cbb52-6  
00:24:38.612 --> 00:24:42.709  
the graph. The green bar labeled  
optimal threshold for NTD

6481b44b-b51f-4079-af29-28654f1cbb52-7  
00:24:42.709 --> 00:24:45.210  
prevention is at approximately  
900.

44ccedd4-3851-4c9b-94b2-6f124267fa43-0  
00:24:45.740 --> 00:24:49.867  
And what we found is that 100  
micrograms a day, none of the

44ccedd4-3851-4c9b-94b2-6f124267fa43-1  
00:24:49.867 --> 00:24:53.857  
genotypes made the optimal  
threshold for blood folate for

44ccedd4-3851-4c9b-94b2-6f124267fa43-2  
00:24:53.857 --> 00:24:58.191  
NTD prevention at 400 micrograms  
per day, all of the genotypes

44ccedd4-3851-4c9b-94b2-6f124267fa43-3  
00:24:58.191 --> 00:25:02.456  
made the optimal threshold by

six months. Now, after stopping

44ccedd4-3851-4c9b-94b2-6f124267fa43-4  
00:25:02.456 --> 00:25:06.583  
supplementation, blood folate  
levels for all groups dropped

44ccedd4-3851-4c9b-94b2-6f124267fa43-5  
00:25:06.583 --> 00:25:08.509  
under the optimal threshold.

25122d8b-9056-41ad-a714-e0e11dc50e27-0  
00:25:11.240 --> 00:25:14.616  
So now that we've established  
that MTHFR variants do not

25122d8b-9056-41ad-a714-e0e11dc50e27-1  
00:25:14.616 --> 00:25:17.756  
prevent individuals from  
effectively utilizing folic

25122d8b-9056-41ad-a714-e0e11dc50e27-2  
00:25:17.756 --> 00:25:21.311  
acid, let's discuss what this  
means for you as the provider

25122d8b-9056-41ad-a714-e0e11dc50e27-3  
00:25:21.311 --> 00:25:24.570  
when counseling patients on the  
significance of MTHFR.

d7d58693-5242-4976-90ea-5a57bd10d536-0  
00:25:25.270 --> 00:25:29.020  
Routine screening for the MTHFR  
variant is not recommended by

d7d58693-5242-4976-90ea-5a57bd10d536-1  
00:25:29.020 --> 00:25:32.468  
the American College of  
Obstetricians and Gynecologists,

d7d58693-5242-4976-90ea-5a57bd10d536-2  
00:25:32.468 --> 00:25:36.159  
and there's no need to look for  
MTHFR variants regarding the

d7d58693-5242-4976-90ea-5a57bd10d536-3  
00:25:36.159 --> 00:25:38.699  
recommendation of 400 micrograms  
per day.

8172fc7c-df5e-4287-a216-fab645de4379-0  
00:25:41.840 --> 00:25:46.429  
So next I want to talk about  
good sources of folic acid for

8172fc7c-df5e-4287-a216-fab645de4379-1

00:25:46.429 --> 00:25:47.500  
your patients.

72e5929f-0c8d-4009-aa69-82b40b8aa93a-0  
00:25:48.200 --> 00:25:51.300  
Next slide, sources of folate  
and folic acid.

52530e06-f0a8-4bca-9ecf-347b2b83088f-0  
00:25:53.150 --> 00:25:56.356  
When we think about increasing  
folate or folic acid intake,

52530e06-f0a8-4bca-9ecf-347b2b83088f-1  
00:25:56.356 --> 00:25:59.029  
there are three approaches. We  
have diet, we have

52530e06-f0a8-4bca-9ecf-347b2b83088f-2  
00:25:59.029 --> 00:26:00.900  
supplementation and  
fortification.

fefb0774-17d6-441a-ad60-8b5abe34e864-0  
00:26:02.100 --> 00:26:06.410  
Next slide. Dietary approach  
deliver folate to populations.

dea0b51e-570b-4981-9176-c20df0104a96-0  
00:26:07.370 --> 00:26:10.950  
And we'll quickly go through  
each of these. Each of these

dea0b51e-570b-4981-9176-c20df0104a96-1  
00:26:10.950 --> 00:26:14.962  
approaches. So first let's talk  
about diet. There is no argument

dea0b51e-570b-4981-9176-c20df0104a96-2  
00:26:14.962 --> 00:26:18.789  
that a healthy diet is really  
important. However, it's almost

dea0b51e-570b-4981-9176-c20df0104a96-3  
00:26:18.789 --> 00:26:22.246  
impossible to get enough  
naturally occurring folate for

dea0b51e-570b-4981-9176-c20df0104a96-4  
00:26:22.246 --> 00:26:26.135  
entity prevention through diet  
alone. The typical woman in the

dea0b51e-570b-4981-9176-c20df0104a96-5  
00:26:26.135 --> 00:26:29.901  
United States consumes only  
about 200 micrograms of folate a

dea0b51e-570b-4981-9176-c20df0104a96-6  
00:26:29.901 --> 00:26:33.481  
day. Now, I want to be very  
clear. We actually don't know

dea0b51e-570b-4981-9176-c20df0104a96-7  
00:26:33.481 --> 00:26:37.185  
how much food folate is needed  
to prevent NTD's. But if you

dea0b51e-570b-4981-9176-c20df0104a96-8  
00:26:37.185 --> 00:26:38.419  
were to extrapolate.

4b2fdfa2-a884-46e5-917c-e4c401f21519-0  
00:26:38.490 --> 00:26:42.381  
How many dietary folate  
equivalents from food that you

4b2fdfa2-a884-46e5-917c-e4c401f21519-1  
00:26:42.381 --> 00:26:46.343  
would need to equal 400  
micrograms of folic acid? You'd

4b2fdfa2-a884-46e5-917c-e4c401f21519-2  
00:26:46.343 --> 00:26:50.588  
need to eat something like 14  
oranges or 12 1/2 cups of raw

4b2fdfa2-a884-46e5-917c-e4c401f21519-3  
00:26:50.588 --> 00:26:54.833  
broccoli, or 22 ripe tomatoes  
each day. And while there are

4b2fdfa2-a884-46e5-917c-e4c401f21519-4  
00:26:54.833 --> 00:26:59.361  
great advantages to a balanced  
diet, most people don't have the

4b2fdfa2-a884-46e5-917c-e4c401f21519-5  
00:26:59.361 --> 00:27:03.960  
dedication, access, or resources  
to rely on natural food folates

4b2fdfa2-a884-46e5-917c-e4c401f21519-6  
00:27:03.960 --> 00:27:07.780  
alone supplementation approach.  
Deliver folic acid to

4b2fdfa2-a884-46e5-917c-e4c401f21519-7  
00:27:07.780 --> 00:27:08.630  
populations.

8fe0ec5e-4922-4ce8-8ec5-5487c89be0b9-0  
00:27:10.540 --> 00:27:14.139  
So now I'm going to talk about

vitamin supplements, folic acid

8fe0ec5e-4922-4ce8-8ec5-5487c89be0b9-1  
00:27:14.139 --> 00:27:17.625  
containing supplements are an  
excellent way to ensure that a

8fe0ec5e-4922-4ce8-8ec5-5487c89be0b9-2  
00:27:17.625 --> 00:27:21.110  
person gets 400 micrograms of  
folic acid. But there are some

8fe0ec5e-4922-4ce8-8ec5-5487c89be0b9-3  
00:27:21.110 --> 00:27:24.482  
disadvantages. This approach  
requires a sustained behavior

8fe0ec5e-4922-4ce8-8ec5-5487c89be0b9-4  
00:27:24.482 --> 00:27:27.967  
change. You know you have to  
take that supplement every day.

8fe0ec5e-4922-4ce8-8ec5-5487c89be0b9-5  
00:27:27.967 --> 00:27:31.510  
And for many women, preventing  
an NTD is considered a distant

8fe0ec5e-4922-4ce8-8ec5-5487c89be0b9-6  
00:27:31.510 --> 00:27:34.881  
outcome. So in other words,  
linking a behavior that has to

8fe0ec5e-4922-4ce8-8ec5-5487c89be0b9-7  
00:27:34.881 --> 00:27:38.652  
be sustained to a future outcome  
that one might or might not even

8fe0ec5e-4922-4ce8-8ec5-5487c89be0b9-8  
00:27:38.652 --> 00:27:39.509  
be considering.

d917ec0e-a91f-435a-bcec-ff4d34b3458a-0  
00:27:39.590 --> 00:27:43.829  
Is a challenge given that 50% of  
pregnancies are unplanned in the

d917ec0e-a91f-435a-bcec-ff4d34b3458a-1  
00:27:43.829 --> 00:27:47.748  
United States, this is not our  
primary strategy. Next slide,

d917ec0e-a91f-435a-bcec-ff4d34b3458a-2  
00:27:47.748 --> 00:27:51.473  
supplement and multivitamin  
labels OK to be really clear.

d917ec0e-a91f-435a-bcec-ff4d34b3458a-3

00:27:51.473 --> 00:27:55.585  
It's important for providers to  
recommend folic acid containing

d917ec0e-a91f-435a-bcec-ff4d34b3458a-4  
00:27:55.585 --> 00:27:59.182  
supplements for NTD prevention.  
Equally important is to

d917ec0e-a91f-435a-bcec-ff4d34b3458a-5  
00:27:59.182 --> 00:28:02.908  
understand what is actually in  
that supplement that we're

d917ec0e-a91f-435a-bcec-ff4d34b3458a-6  
00:28:02.908 --> 00:28:06.826  
recommending. Many of you may be  
surprised to hear that many

d917ec0e-a91f-435a-bcec-ff4d34b3458a-7  
00:28:06.826 --> 00:28:09.909  
multivitamins are opting to use  
other forms of.

e48962d4-1897-4ab8-a477-d4c2e6dd0bf4-0  
00:28:09.980 --> 00:28:11.630  
Folate instead of folic acid.

c34fdd42-6a41-49e7-b244-2b1e7e34f27b-0  
00:28:12.350 --> 00:28:15.887  
Currently, folic acid is the  
only form of folate shown in

c34fdd42-6a41-49e7-b244-2b1e7e34f27b-1  
00:28:15.887 --> 00:28:19.791  
randomized controlled trials to  
prevent NTD's, and it's unknown

c34fdd42-6a41-49e7-b244-2b1e7e34f27b-2  
00:28:19.791 --> 00:28:23.329  
if other folate forms are  
effective for NTD prevention or

c34fdd42-6a41-49e7-b244-2b1e7e34f27b-3  
00:28:23.329 --> 00:28:27.049  
at what dose that is needed, or  
if any cofactors are needed.

e641a910-8b66-430d-a467-05594b3ca9b3-0  
00:28:27.930 --> 00:28:31.646  
Due to this, it's important to  
carefully inspect, supplement,

e641a910-8b66-430d-a467-05594b3ca9b3-1  
00:28:31.646 --> 00:28:35.242  
and multivitamin labels to  
identify which form of folate is

e641a910-8b66-430d-a467-05594b3ca9b3-2  
00:28:35.242 --> 00:28:38.479  
being utilized. And like with  
many things, more isn't

e641a910-8b66-430d-a467-05594b3ca9b3-3  
00:28:38.479 --> 00:28:41.835  
necessarily better for NTD  
prevention. Higher doses are

e641a910-8b66-430d-a467-05594b3ca9b3-4  
00:28:41.835 --> 00:28:45.251  
only recommended for specific  
medical conditions, like a

e641a910-8b66-430d-a467-05594b3ca9b3-5  
00:28:45.251 --> 00:28:48.728  
previous entity affected  
pregnancy, and these discussions

e641a910-8b66-430d-a467-05594b3ca9b3-6  
00:28:48.728 --> 00:28:52.504  
really should be made with the  
healthcare provider. So also be

e641a910-8b66-430d-a467-05594b3ca9b3-7  
00:28:52.504 --> 00:28:56.040  
listening to your patients that  
report mega doses in their

e641a910-8b66-430d-a467-05594b3ca9b3-8  
00:28:56.040 --> 00:28:56.760  
supplements.

eac8bee7-07a0-4b03-9f2a-268b5012c691-0  
00:28:59.650 --> 00:29:03.128  
So supplement and multivitamin  
labels can be extremely

eac8bee7-07a0-4b03-9f2a-268b5012c691-1  
00:29:03.128 --> 00:29:07.176  
confusing for your patients now.  
Here we have an example of two

eac8bee7-07a0-4b03-9f2a-268b5012c691-2  
00:29:07.176 --> 00:29:10.970  
labels. Both labels state that  
they contain folate, but the

eac8bee7-07a0-4b03-9f2a-268b5012c691-3  
00:29:10.970 --> 00:29:13.879  
form being utilized is placed in  
parentheses.

b8cdd957-d835-462d-87c2-3c70d28bd662-0  
00:29:14.650 --> 00:29:18.418



Many multivitamins are opting to  
use a form of five methyl

b8cdd957-d835-462d-87c2-3c70d28bd662-1  
00:29:18.418 --> 00:29:22.058  
instead of folic acid. Now these  
multivitamins are being

b8cdd957-d835-462d-87c2-3c70d28bd662-2  
00:29:22.058 --> 00:29:26.274  
advertised as usual, utilizing a  
more natural form of folate, and

b8cdd957-d835-462d-87c2-3c70d28bd662-3  
00:29:26.274 --> 00:29:29.723  
I want to take this time to  
discuss the importance of

b8cdd957-d835-462d-87c2-3c70d28bd662-4  
00:29:29.723 --> 00:29:33.810  
understanding that all forms of  
folate found in supplements are

b8cdd957-d835-462d-87c2-3c70d28bd662-5  
00:29:33.810 --> 00:29:38.026  
man made. One of the most common  
forms being touted as natural as

b8cdd957-d835-462d-87c2-3c70d28bd662-6  
00:29:38.026 --> 00:29:41.794  
a natural form of folate is 5  
methyl. However, if you look

b8cdd957-d835-462d-87c2-3c70d28bd662-7  
00:29:41.794 --> 00:29:44.859  
closely at the label on the  
right, the form of.

d096ca58-03ba-41b4-a59d-45bfd139b09a-0  
00:29:44.930 --> 00:29:48.995  
5 methyl had to be modified with  
glycosylation. The addition of

d096ca58-03ba-41b4-a59d-45bfd139b09a-1  
00:29:48.995 --> 00:29:52.425  
that 6S and it's been  
encapsulated with a glucosamine

d096ca58-03ba-41b4-a59d-45bfd139b09a-2  
00:29:52.425 --> 00:29:56.236  
salt. Now these modifications  
are manufactured and they are

d096ca58-03ba-41b4-a59d-45bfd139b09a-3  
00:29:56.236 --> 00:30:00.365  
necessary to stabilize that five  
methyl. Without these synthetic

d096ca58-03ba-41b4-a59d-45bfd139b09a-4  
00:30:00.365 --> 00:30:04.366  
modifications, 5 methyl on its  
own would not be stable, so the

d096ca58-03ba-41b4-a59d-45bfd139b09a-5  
00:30:04.366 --> 00:30:07.733  
types of folate found in  
vitamins or supplements are

d096ca58-03ba-41b4-a59d-45bfd139b09a-6  
00:30:07.733 --> 00:30:11.734  
different from the folate found  
in fruits and vegetables, even

d096ca58-03ba-41b4-a59d-45bfd139b09a-7  
00:30:11.734 --> 00:30:15.800  
if the dietary supplement label  
claims that it is natural food.

de9b91f5-3bba-499f-9b15-ee62661e6c4e-0  
00:30:15.880 --> 00:30:16.210  
Delay.

79f4324f-792a-404c-880b-3bcd50a436e-0  
00:30:16.880 --> 00:30:21.135  
Now these different formulations  
to my knowledge have no RCT's

79f4324f-792a-404c-880b-3bcd50a436e-1  
00:30:21.135 --> 00:30:24.648  
behind them showing the  
effectiveness in preventing

79f4324f-792a-404c-880b-3bcd50a436e-2  
00:30:24.648 --> 00:30:28.566  
NTD's. Only folic acid has been  
proven to reduce NTD's in

79f4324f-792a-404c-880b-3bcd50a436e-3  
00:30:28.566 --> 00:30:32.821  
clinical trials. And you know  
the other thing about folic acid

79f4324f-792a-404c-880b-3bcd50a436e-4  
00:30:32.821 --> 00:30:37.145  
is it's very inexpensive. Next  
slide, Nutrition label update at

79f4324f-792a-404c-880b-3bcd50a436e-5  
00:30:37.145 --> 00:30:41.198  
the top one microgram of folic  
acid equals 1.67 micrograms,

79f4324f-792a-404c-880b-3bcd50a436e-6  
00:30:41.198 --> 00:30:45.048

dietary folate equivalents, or  
DfE. Another uh change to

79f4324f-792a-404c-880b-3bcd50a436e-7  
00:30:45.048 --> 00:30:46.940  
nutrition labeling, that is.

0b906f40-1d68-4be9-89dc-71f01422facf-0  
00:30:47.020 --> 00:30:51.388  
Been extremely confusing to  
patients is the recent change to

0b906f40-1d68-4be9-89dc-71f01422facf-1  
00:30:51.388 --> 00:30:55.971  
the dietary value statement, so  
the change in the percent daily

0b906f40-1d68-4be9-89dc-71f01422facf-2  
00:30:55.971 --> 00:30:59.839  
value or DV for folate on the  
new nutrition facts and

0b906f40-1d68-4be9-89dc-71f01422facf-3  
00:30:59.839 --> 00:31:04.064  
supplement facts labels prior to  
January 1st, 2021, it was

0b906f40-1d68-4be9-89dc-71f01422facf-4  
00:31:04.064 --> 00:31:08.648  
micrograms of folic acid. That  
was the unit of measure. So with

0b906f40-1d68-4be9-89dc-71f01422facf-5  
00:31:08.648 --> 00:31:13.088  
the old labels, what it showed  
was the percent daily value of

0b906f40-1d68-4be9-89dc-71f01422facf-6  
00:31:13.088 --> 00:31:17.241  
folic acid contained in each  
serving. So 100% DV of folic

0b906f40-1d68-4be9-89dc-71f01422facf-7  
00:31:17.241 --> 00:31:17.600  
acid.

4a9721ed-795f-4af8-a698-feacb4c0cf8e-0  
00:31:17.700 --> 00:31:22.245  
Was equal to 400 micrograms of  
folic acid on the new nutrition

4a9721ed-795f-4af8-a698-feacb4c0cf8e-1  
00:31:22.245 --> 00:31:26.503  
facts and supplement facts  
labels, the unit of measure has

4a9721ed-795f-4af8-a698-feacb4c0cf8e-2

00:31:26.503 --> 00:31:30.976  
been changed to micrograms of  
dietary folate equivalents. The

4a9721ed-795f-4af8-a698-feacb4c0cf8e-3  
00:31:30.976 --> 00:31:35.739  
new DF E recommendations are for  
anemia prevention. So let me say

4a9721ed-795f-4af8-a698-feacb4c0cf8e-4  
00:31:35.739 --> 00:31:40.429  
that again, when you see 100% of  
the DVD's, that is 100% of what

4a9721ed-795f-4af8-a698-feacb4c0cf8e-5  
00:31:40.429 --> 00:31:42.450  
is needed to prevent anemia.

96d5c16d-ceb8-48bb-8720-2bd43d0537e9-0  
00:31:43.230 --> 00:31:47.935  
Nutrition facts and supplement  
facts labels now show both the

96d5c16d-ceb8-48bb-8720-2bd43d0537e9-1  
00:31:47.935 --> 00:31:52.869  
amount of folate in micrograms D  
Fe and micrograms of folic acid

96d5c16d-ceb8-48bb-8720-2bd43d0537e9-2  
00:31:52.869 --> 00:31:53.780  
per serving.

2d0f602f-968c-49e1-819b-3260a3e30180-0  
00:31:54.490 --> 00:31:58.549  
You know, just know that these  
these terms are not

2d0f602f-968c-49e1-819b-3260a3e30180-1  
00:31:58.549 --> 00:32:03.405  
interchangeable and this is a  
very important distinction. It

2d0f602f-968c-49e1-819b-3260a3e30180-2  
00:32:03.405 --> 00:32:08.499  
takes 1.67, micrograms, DfE to  
equal 1 microgram of folic acid.

2d0f602f-968c-49e1-819b-3260a3e30180-3  
00:32:08.499 --> 00:32:13.594  
So when you see 400 micrograms  
DfE, this actually equals to 240

2d0f602f-968c-49e1-819b-3260a3e30180-4  
00:32:13.594 --> 00:32:18.689  
micrograms of folic acid, which  
is the amount needed to prevent

2d0f602f-968c-49e1-819b-3260a3e30180-5  
00:32:18.689 --> 00:32:23.624  
anemia. For entity prevention  
using DF E, You really need 667

2d0f602f-968c-49e1-819b-3260a3e30180-6  
00:32:23.624 --> 00:32:24.499  
micrograms.

0d310e3d-da94-42d5-9ea2-ef3c5fbcbbcaf-0  
00:32:24.620 --> 00:32:29.416  
Fe which is the equivalent to  
400 micrograms of folic acid.

0d310e3d-da94-42d5-9ea2-ef3c5fbcbbcaf-1  
00:32:29.416 --> 00:32:34.613  
This is 167% of the DVD because  
it takes more folic acid to help

0d310e3d-da94-42d5-9ea2-ef3c5fbcbbcaf-2  
00:32:34.613 --> 00:32:39.490  
prevent a neural tube defect  
than it does to prevent anemia.

9d4f07db-1eda-49ec-b2e2-c89532190d46-0  
00:32:42.480 --> 00:32:46.658  
So the easiest way to check is  
to look for micrograms of folic

9d4f07db-1eda-49ec-b2e2-c89532190d46-1  
00:32:46.658 --> 00:32:50.836  
acid, which will be listed in  
the parentheses. For example, in

9d4f07db-1eda-49ec-b2e2-c89532190d46-2  
00:32:50.836 --> 00:32:54.218  
the new label shown on the  
right, the total folate

9d4f07db-1eda-49ec-b2e2-c89532190d46-3  
00:32:54.218 --> 00:32:58.131  
contained in one tablet of the  
supplement is listed as 667

9d4f07db-1eda-49ec-b2e2-c89532190d46-4  
00:32:58.131 --> 00:33:01.845  
micrograms DfE, or 400  
micrograms of folic acid. I know

9d4f07db-1eda-49ec-b2e2-c89532190d46-5  
00:33:01.845 --> 00:33:05.691  
that's super confusing, so be  
sure that your patients are

9d4f07db-1eda-49ec-b2e2-c89532190d46-6  
00:33:05.691 --> 00:33:09.869  
looking for 400 micrograms of

folic acid in their supplements.

8dbfecf7-ff14-4874-a7aa-4d108655c35d-0  
00:33:11.030 --> 00:33:14.986  
Next slide, fortification  
approach deliver folic acid to

8dbfecf7-ff14-4874-a7aa-4d108655c35d-1  
00:33:14.986 --> 00:33:15.820  
populations.

73501669-27e0-4947-a567-0ba08629cb8c-0  
00:33:16.830 --> 00:33:20.744  
So the third approach we have is  
fortification and it is our

73501669-27e0-4947-a567-0ba08629cb8c-1  
00:33:20.744 --> 00:33:24.916  
primary intervention. the US ads  
for folic acid to foods labeled

73501669-27e0-4947-a567-0ba08629cb8c-2  
00:33:24.916 --> 00:33:29.024  
as enriched, which contain 140  
micrograms of folic acid per 100

73501669-27e0-4947-a567-0ba08629cb8c-3  
00:33:29.024 --> 00:33:32.746  
grams of grain product. It has  
good bioavailability, it's

73501669-27e0-4947-a567-0ba08629cb8c-4  
00:33:32.746 --> 00:33:36.725  
inexpensive, and it covers pre  
pregnancy. Contemplate Ars and

73501669-27e0-4947-a567-0ba08629cb8c-5  
00:33:36.725 --> 00:33:40.704  
non contemplations and there's  
minimal behavior change that's

73501669-27e0-4947-a567-0ba08629cb8c-6  
00:33:40.704 --> 00:33:43.913  
needed. There are a few  
disadvantages. One of the

73501669-27e0-4947-a567-0ba08629cb8c-7  
00:33:43.913 --> 00:33:48.085  
disadvantages is that there's a  
wide variation in consumption of

73501669-27e0-4947-a567-0ba08629cb8c-8  
00:33:48.085 --> 00:33:48.920  
staple foods.

d68ea7bf-053f-4bd5-b243-e85767de1216-0  
00:33:49.040 --> 00:33:52.493

So think about your patients  
that are maybe you're on low

d68ea7bf-053f-4bd5-b243-e85767de1216-1  
00:33:52.493 --> 00:33:56.245  
carb diets or they don't eat a  
lot of enriched wheat products.

d68ea7bf-053f-4bd5-b243-e85767de1216-2  
00:33:56.245 --> 00:33:59.818  
And in the US, we don't fortify  
at level set to prevent all

d68ea7bf-053f-4bd5-b243-e85767de1216-3  
00:33:59.818 --> 00:34:02.855  
folic acid preventable birth  
defects. So these two

d68ea7bf-053f-4bd5-b243-e85767de1216-4  
00:34:02.855 --> 00:34:06.547  
disadvantages were some of the,  
you know, biggest drivers for

d68ea7bf-053f-4bd5-b243-e85767de1216-5  
00:34:06.547 --> 00:34:10.120  
our voluntary foreign mossa  
flower fortification, mainly to

d68ea7bf-053f-4bd5-b243-e85767de1216-6  
00:34:10.120 --> 00:34:13.872  
target Hispanic populations that  
don't need a lot of fortified

d68ea7bf-053f-4bd5-b243-e85767de1216-7  
00:34:13.872 --> 00:34:14.229  
wheat.

0459a709-6a23-46b7-975d-546197a5fd10-0  
00:34:15.910 --> 00:34:20.358  
Next slide, impact of mandatory  
folic acid fortification and

0459a709-6a23-46b7-975d-546197a5fd10-1  
00:34:20.358 --> 00:34:20.650  
NTD.

abced478-04d6-4287-ba79-304a3a7ac5bf-0  
00:34:21.460 --> 00:34:25.705  
So going back to mandatory folic  
acid fortification, since the

abced478-04d6-4287-ba79-304a3a7ac5bf-1  
00:34:25.705 --> 00:34:29.748  
implementation of mandatory  
fortification, there has been a

abced478-04d6-4287-ba79-304a3a7ac5bf-2

00:34:29.748 --> 00:34:33.859  
35% reduction in the occurrence  
of NTD's. In addition, we've

abced478-04d6-4287-ba79-304a3a7ac5bf-3  
00:34:33.859 --> 00:34:37.969  
seen a decline in the prevalence  
of severe upper upper level

abced478-04d6-4287-ba79-304a3a7ac5bf-4  
00:34:37.969 --> 00:34:42.147  
lesion cases of spina bifida by  
72%. So the take home message

abced478-04d6-4287-ba79-304a3a7ac5bf-5  
00:34:42.147 --> 00:34:45.989  
about the success of the US  
fortification policy is that

abced478-04d6-4287-ba79-304a3a7ac5bf-6  
00:34:45.989 --> 00:34:50.436  
what we have seen a reduction in  
overall entities and among those

abced478-04d6-4287-ba79-304a3a7ac5bf-7  
00:34:50.436 --> 00:34:51.379  
who were born.

510cad13-9b8f-4176-bf38-3cbea1f0e310-0  
00:34:51.470 --> 00:34:55.235  
Spina bifida. We see fewer  
severe upper level lesion cases,

510cad13-9b8f-4176-bf38-3cbea1f0e310-1  
00:34:55.235 --> 00:34:59.126  
so I'm I'm often asked why we  
don't see a continued reduction

510cad13-9b8f-4176-bf38-3cbea1f0e310-2  
00:34:59.126 --> 00:35:02.891  
in NTD's. And the short answer  
is that our intervention has

510cad13-9b8f-4176-bf38-3cbea1f0e310-3  
00:35:02.891 --> 00:35:06.845  
remained the same. It's expected  
for NTD occurrence to plateau

510cad13-9b8f-4176-bf38-3cbea1f0e310-4  
00:35:06.845 --> 00:35:10.548  
since we don't fortify at levels  
to prevent all folic acid

510cad13-9b8f-4176-bf38-3cbea1f0e310-5  
00:35:10.548 --> 00:35:14.376  
preventable entities. And there  
are other causes of entities



510cad13-9b8f-4176-bf38-3cbealf0e310-6  
00:35:14.376 --> 00:35:18.079  
that are not preventable by  
folic acid. So in order for us

510cad13-9b8f-4176-bf38-3cbealf0e310-7  
00:35:18.079 --> 00:35:21.593  
to see a continued reduction in  
entities in addition to

510cad13-9b8f-4176-bf38-3cbealf0e310-8  
00:35:21.593 --> 00:35:23.100  
maintaining our current.

15db9412-ab76-480b-8785-03e87e582073-0  
00:35:23.170 --> 00:35:26.082  
Certification efforts as  
providers, we need to be

15db9412-ab76-480b-8785-03e87e582073-1  
00:35:26.082 --> 00:35:29.694  
educating every new generation  
of people capable of pregnancy

15db9412-ab76-480b-8785-03e87e582073-2  
00:35:29.694 --> 00:35:33.132  
about the importance of daily  
intake of folic acid through

15db9412-ab76-480b-8785-03e87e582073-3  
00:35:33.132 --> 00:35:36.918  
fortified foods and supplements.  
In addition to eating a healthy

15db9412-ab76-480b-8785-03e87e582073-4  
00:35:36.918 --> 00:35:38.550  
diet with folate rich foods.

ef32e4fc-9b75-44b6-a89c-8a955e1ed944-0  
00:35:39.700 --> 00:35:43.172  
Next slide changes in NTD  
prevalence before and after

ef32e4fc-9b75-44b6-a89c-8a955e1ed944-1  
00:35:43.172 --> 00:35:46.388  
mandatory folic acid  
fortification. A chart title

ef32e4fc-9b75-44b6-a89c-8a955e1ed944-2  
00:35:46.388 --> 00:35:50.440  
change in NTD prevalence pre and  
post folic acid fortification

ef32e4fc-9b75-44b6-a89c-8a955e1ed944-3  
00:35:50.440 --> 00:35:54.299  
shows the study and country

fortification level participant

ef32e4fc-9b75-44b6-a89c-8a955e1ed944-4  
00:35:54.299 --> 00:35:57.964  
number and NTD prevalence  
pretend thousand. A key to the

ef32e4fc-9b75-44b6-a89c-8a955e1ed944-5  
00:35:57.964 --> 00:36:02.145  
study design shows hospital pre  
and post rates or population pre

ef32e4fc-9b75-44b6-a89c-8a955e1ed944-6  
00:36:02.145 --> 00:36:03.109  
and post rates.

d17fa512-3e7d-4176-a524-db03fd17d9a2-0  
00:36:04.390 --> 00:36:09.005  
So this slide depicts changes in  
NT rates seen in other countries

d17fa512-3e7d-4176-a524-db03fd17d9a2-1  
00:36:09.005 --> 00:36:13.271  
that adopted fortification in  
addition to the United States.

d17fa512-3e7d-4176-a524-db03fd17d9a2-2  
00:36:13.271 --> 00:36:17.537  
Now what you see are NTD rates  
per 10,000 live births before

d17fa512-3e7d-4176-a524-db03fd17d9a2-3  
00:36:17.537 --> 00:36:21.243  
and after the implementation of  
mandatory folic acid

d17fa512-3e7d-4176-a524-db03fd17d9a2-4  
00:36:21.243 --> 00:36:25.369  
fortification, and this comes  
from population and hospital

d17fa512-3e7d-4176-a524-db03fd17d9a2-5  
00:36:25.369 --> 00:36:29.495  
surveillance programs. Hospital  
programs are in green, and

d17fa512-3e7d-4176-a524-db03fd17d9a2-6  
00:36:29.495 --> 00:36:34.041  
population programs are depicted  
in blue. The darker brand bands

d17fa512-3e7d-4176-a524-db03fd17d9a2-7  
00:36:34.041 --> 00:36:35.580  
are pre fortification.

cbac55b3-8384-40d9-99e4-f6243a84f134-0  
00:36:35.710 --> 00:36:40.764

And the lighter bands are post  
and as you can see from this

cbac55b3-8384-40d9-99e4-f6243a84f134-1  
00:36:40.764 --> 00:36:46.240  
graph, most programs saw a 30 to  
60% decline in their NTD rates.

5b694939-4d37-4912-b83d-277d679c7ae3-0  
00:36:48.750 --> 00:36:51.775  
So with many interventions,  
especially those where the

5b694939-4d37-4912-b83d-277d679c7ae3-1  
00:36:51.775 --> 00:36:55.021  
entire population is exposed,  
there are concerns regarding

5b694939-4d37-4912-b83d-277d679c7ae3-2  
00:36:55.021 --> 00:36:58.597  
folic acid discussion on safety  
is an entirely different webinar

5b694939-4d37-4912-b83d-277d679c7ae3-3  
00:36:58.597 --> 00:37:01.733  
altogether. But this next  
section is about how you, as a

5b694939-4d37-4912-b83d-277d679c7ae3-4  
00:37:01.733 --> 00:37:05.254  
provider can find information in  
order to address concerns that

5b694939-4d37-4912-b83d-277d679c7ae3-5  
00:37:05.254 --> 00:37:07.179  
you might hear from your  
patients.

ce828814-efee-4cb6-bd16-7d19b85ae42a-0  
00:37:08.170 --> 00:37:11.947  
Next slide, summary of folic  
acid safety issues discussed in

ce828814-efee-4cb6-bd16-7d19b85ae42a-1  
00:37:11.947 --> 00:37:15.787  
comprehensive evidence based  
folic acid safety reviews of six

ce828814-efee-4cb6-bd16-7d19b85ae42a-2  
00:37:15.787 --> 00:37:17.460  
major international bodies.

15a61dbc-b5f1-45f3-887d-73927074e928-0  
00:37:18.600 --> 00:37:22.625  
Several entities have looked at  
the state of the science to

15a61dbc-b5f1-45f3-887d-73927074e928-1  
00:37:22.625 --> 00:37:26.517  
assess what is known about  
safety of folic acid along the

15a61dbc-b5f1-45f3-887d-73927074e928-2  
00:37:26.517 --> 00:37:30.342  
top of this slide is the  
examining scientific body along

15a61dbc-b5f1-45f3-887d-73927074e928-3  
00:37:30.342 --> 00:37:34.703  
the left side is the particular  
concern that was examined and as

15a61dbc-b5f1-45f3-887d-73927074e928-4  
00:37:34.703 --> 00:37:38.997  
you can see, concerns regarding  
daily upper level of folic acid

15a61dbc-b5f1-45f3-887d-73927074e928-5  
00:37:38.997 --> 00:37:42.553  
and metabolized folic acid  
masking of B12 deficiency

15a61dbc-b5f1-45f3-887d-73927074e928-6  
00:37:42.553 --> 00:37:46.378  
anemia, cancers among other  
concerns, have been examined

15a61dbc-b5f1-45f3-887d-73927074e928-7  
00:37:46.378 --> 00:37:48.190  
over the years. Next slide.

b3f6457c-34bb-4671-9498-1659ce1ba904-0  
00:37:48.440 --> 00:37:52.205  
Both studies on cancer,  
colorectal cancer and diabetes

b3f6457c-34bb-4671-9498-1659ce1ba904-1  
00:37:52.205 --> 00:37:53.370  
related outcomes.

22ae59e6-e93e-4e86-b9e6-6bf6364fd43b-0  
00:37:57.040 --> 00:38:00.321  
I want to give you some  
information on where you can

22ae59e6-e93e-4e86-b9e6-6bf6364fd43b-1  
00:38:00.321 --> 00:38:04.097  
find data on pooled studies. For  
some of these outcomes, the

22ae59e6-e93e-4e86-b9e6-6bf6364fd43b-2  
00:38:04.097 --> 00:38:07.811  
links on this slide are from  
publicly available assessments

22ae59e6-e93e-4e86-b9e6-6bf6364fd43b-3  
00:38:07.811 --> 00:38:11.216  
which you can filter by topic  
base URL of all links is

22ae59e6-e93e-4e86-b9e6-6bf6364fd43b-4  
00:38:11.216 --> 00:38:15.178  
hwcproject.org. Each assessment  
was conducted by an independent

22ae59e6-e93e-4e86-b9e6-6bf6364fd43b-5  
00:38:15.178 --> 00:38:18.707  
team and details on the  
objectives and methodologies are

22ae59e6-e93e-4e86-b9e6-6bf6364fd43b-6  
00:38:18.707 --> 00:38:22.359  
described in each of these  
assessments. Now on this slide,

22ae59e6-e93e-4e86-b9e6-6bf6364fd43b-7  
00:38:22.359 --> 00:38:26.135  
I have the specific links to the  
forest plots for all cancer

22ae59e6-e93e-4e86-b9e6-6bf6364fd43b-8  
00:38:26.135 --> 00:38:27.250  
colorectal cancer.

b9a1c203-7579-467b-aa00-8a52f5fa6529-0  
00:38:27.320 --> 00:38:31.267  
Specifically, and diabetes  
related outcomes to the right of

b9a1c203-7579-467b-aa00-8a52f5fa6529-1  
00:38:31.267 --> 00:38:35.281  
this slide is the forest plot  
for colorectal cancers. And in

b9a1c203-7579-467b-aa00-8a52f5fa6529-2  
00:38:35.281 --> 00:38:39.426  
this example, the preponderance  
of evidence is that folic acid

b9a1c203-7579-467b-aa00-8a52f5fa6529-3  
00:38:39.426 --> 00:38:43.505  
at recommended doses does not  
result in an increased risk for

b9a1c203-7579-467b-aa00-8a52f5fa6529-4  
00:38:43.505 --> 00:38:44.690  
colorectal cancer.

c5c6f521-5f7b-4338-9599-bbc72827f4dd-0  
00:38:47.930 --> 00:38:51.050  
Next slide addressing folic acid

concerns.

d82aadcf-7945-4b6d-9d0b-9ca2d046a584-0  
00:38:52.020 --> 00:38:54.947  
So how can you address your  
patients concerns? Well,

d82aadcf-7945-4b6d-9d0b-9ca2d046a584-1  
00:38:54.947 --> 00:38:57.930  
consistent with the US  
Preventive Services Task Force

d82aadcf-7945-4b6d-9d0b-9ca2d046a584-2  
00:38:57.930 --> 00:39:01.355  
recommendations, you can assure  
your patients that taking the

d82aadcf-7945-4b6d-9d0b-9ca2d046a584-3  
00:39:01.355 --> 00:39:04.559  
recommended amount of folic acid  
has not been shown to be

d82aadcf-7945-4b6d-9d0b-9ca2d046a584-4  
00:39:04.559 --> 00:39:07.708  
harmful. As new studies become  
available, they are being

d82aadcf-7945-4b6d-9d0b-9ca2d046a584-5  
00:39:07.708 --> 00:39:11.188  
assessed and weighted against  
the totality of evidence. Remind

d82aadcf-7945-4b6d-9d0b-9ca2d046a584-6  
00:39:11.188 --> 00:39:14.503  
your patients that more is not  
necessarily better. We don't

d82aadcf-7945-4b6d-9d0b-9ca2d046a584-7  
00:39:14.503 --> 00:39:17.762  
recommend high dose supplements  
except for those with very

d82aadcf-7945-4b6d-9d0b-9ca2d046a584-8  
00:39:17.762 --> 00:39:21.187  
specific medical conditions or  
with the previous NTD affected

d82aadcf-7945-4b6d-9d0b-9ca2d046a584-9  
00:39:21.187 --> 00:39:21.739  
pregnancy.

7e12f3c4-dcc6-497e-b2aa-728aacadcd0a-0  
00:39:21.940 --> 00:39:26.827  
In that decision, the need for  
high doses of folic acid should

7e12f3c4-dcc6-497e-b2aa-728aacadcd0a-1

00:39:26.827 --> 00:39:30.861  
really happen only after a  
conversation between the

7e12f3c4-dcc6-497e-b2aa-728aacadcd0a-2  
00:39:30.861 --> 00:39:35.748  
individual and their healthcare  
provider. The vast majority of

7e12f3c4-dcc6-497e-b2aa-728aacadcd0a-3  
00:39:35.748 --> 00:39:40.636  
people do not need more than the  
recommended amount, and we do

7e12f3c4-dcc6-497e-b2aa-728aacadcd0a-4  
00:39:40.636 --> 00:39:44.902  
have some answers to specific  
commonly asked questions

7e12f3c4-dcc6-497e-b2aa-728aacadcd0a-5  
00:39:44.902 --> 00:39:48.549  
available on our website. You  
can find that at

7e12f3c4-dcc6-497e-b2aa-728aacadcd0a-6  
00:39:48.549 --> 00:39:52.039  
[www.cdc.gov/NCBDDD/folicacid/FAQ's](http://www.cdc.gov/NCBDDD/folicacid/FAQ's)  
and that.

3093bfb0-b2d6-4226-bb32-f02353d9ab3e-0  
00:39:52.110 --> 00:39:54.999  
Would be helpful as well in  
addressing your patients

3093bfb0-b2d6-4226-bb32-f02353d9ab3e-1  
00:39:54.999 --> 00:39:55.490  
concerns.

9f0aad25-2122-4e6c-8925-4daae15d3613-0  
00:39:57.160 --> 00:39:58.760  
Next slide summary.

9d0e7cbd-93f1-42f7-8e28-070412ac79f0-0  
00:39:59.470 --> 00:40:04.277  
So in summary, folic acid is  
safe and affected effective at

9d0e7cbd-93f1-42f7-8e28-070412ac79f0-1  
00:40:04.277 --> 00:40:09.165  
recommended doses in preventing  
NTD's across populations. We

9d0e7cbd-93f1-42f7-8e28-070412ac79f0-2  
00:40:09.165 --> 00:40:13.973  
have 1300 babies born healthy  
and NTD free because of folic

9d0e7cbd-93f1-42f7-8e28-070412ac79f0-3  
00:40:13.973 --> 00:40:17.739  
acid. This saves the US \$603  
million annually.

0747867c-cc3e-4a5c-aa5c-36523416a27b-0  
00:40:18.430 --> 00:40:22.475  
And at the current time, folic  
acid is the only form of folate

0747867c-cc3e-4a5c-aa5c-36523416a27b-1  
00:40:22.475 --> 00:40:26.264  
proven to prevent NTD's. No  
other form has undergone RCT's

0747867c-cc3e-4a5c-aa5c-36523416a27b-2  
00:40:26.264 --> 00:40:29.090  
to assess effectiveness for NTD  
prevention.

7d015261-5703-44ab-b2a0-625a11abb5f7-0  
00:40:32.190 --> 00:40:36.821  
And I want to thank you so much  
for your attention. And now I

7d015261-5703-44ab-b2a0-625a11abb5f7-1  
00:40:36.821 --> 00:40:41.303  
will turn the platform over to  
my colleague, Doctor Shannon

7d015261-5703-44ab-b2a0-625a11abb5f7-2  
00:40:41.303 --> 00:40:46.158  
Clark, to talk about frequently  
asked questions. Providers might

7d015261-5703-44ab-b2a0-625a11abb5f7-3  
00:40:46.158 --> 00:40:50.416  
get about folic acid. Next  
slide, FAQ's about folic acid

7d015261-5703-44ab-b2a0-625a11abb5f7-4  
00:40:50.416 --> 00:40:54.898  
CDC webinar, September 14th,  
2022 logo, UTMB health speaker

7d015261-5703-44ab-b2a0-625a11abb5f7-5  
00:40:54.898 --> 00:40:58.857  
Shannon Clark and MSFACTOG  
professor, maternal fetal

7d015261-5703-44ab-b2a0-625a11abb5f7-6  
00:40:58.857 --> 00:40:59.530  
medicine.

ab45bd6b-70f8-4dfe-b9d1-e9ce2341b638-0  
00:41:02.030 --> 00:41:05.664  
Thank you. That was a really,



really comprehensive and great

ab45bd6b-70f8-4dfe-b9d1-e9ce2341b638-1  
00:41:05.664 --> 00:41:08.822  
review there over all the  
information and I'm really

ab45bd6b-70f8-4dfe-b9d1-e9ce2341b638-2  
00:41:08.822 --> 00:41:12.278  
honored to be a part of this  
today. I am a maternal fetal

ab45bd6b-70f8-4dfe-b9d1-e9ce2341b638-3  
00:41:12.278 --> 00:41:15.734  
medicine specialist and I also  
do a lot of misinformation

ab45bd6b-70f8-4dfe-b9d1-e9ce2341b638-4  
00:41:15.734 --> 00:41:19.309  
fighting concerning pregnancy  
related information on social

ab45bd6b-70f8-4dfe-b9d1-e9ce2341b638-5  
00:41:19.309 --> 00:41:22.705  
media and by far the topic of  
folic acid is one of those

ab45bd6b-70f8-4dfe-b9d1-e9ce2341b638-6  
00:41:22.705 --> 00:41:26.221  
topics that gets a lot of  
traction on social media. So I'm

ab45bd6b-70f8-4dfe-b9d1-e9ce2341b638-7  
00:41:26.221 --> 00:41:29.438  
just going to go over some of  
the most commonly asked

ab45bd6b-70f8-4dfe-b9d1-e9ce2341b638-8  
00:41:29.438 --> 00:41:30.690  
questions that I get.

42775bbc-af77-4a67-b7cd-00b7676be479-0  
00:41:30.770 --> 00:41:34.400  
For some of the things that are  
surround misinformation on

42775bbc-af77-4a67-b7cd-00b7676be479-1  
00:41:34.400 --> 00:41:38.153  
social media regarding folic  
acid, next slide. OK. The first

42775bbc-af77-4a67-b7cd-00b7676be479-2  
00:41:38.153 --> 00:41:41.783  
is our folate and folic acid,  
the same thing, and it seems

42775bbc-af77-4a67-b7cd-00b7676be479-3

00:41:41.783 --> 00:41:45.783  
that no matter how many times I  
address this, there's still some

42775bbc-af77-4a67-b7cd-00b7676be479-4  
00:41:45.783 --> 00:41:49.351  
disconnect there that the  
average individual reproductive

42775bbc-af77-4a67-b7cd-00b7676be479-5  
00:41:49.351 --> 00:41:53.228  
each individual has. Regarding  
this topic, so the terms folate

42775bbc-af77-4a67-b7cd-00b7676be479-6  
00:41:53.228 --> 00:41:57.165  
and folic acid unfortunately are  
used interchangeably, although

42775bbc-af77-4a67-b7cd-00b7676be479-7  
00:41:57.165 --> 00:42:00.550  
they are very, very different  
and we know that folate.

0bef320b-521b-4e64-b28b-22d60d1c93b2-0  
00:42:00.910 --> 00:42:04.522  
Is the kind of the umbrella term  
for the vitamin B9 that it's a

0bef320b-521b-4e64-b28b-22d60d1c93b2-1  
00:42:04.522 --> 00:42:07.400  
present naturally present in  
many foods, including

0bef320b-521b-4e64-b28b-22d60d1c93b2-2  
00:42:07.400 --> 00:42:10.955  
vegetables, fruits, beef, liver,  
nuts, beans and peas, whereas

0bef320b-521b-4e64-b28b-22d60d1c93b2-3  
00:42:10.955 --> 00:42:14.680  
folic acid is the synthetic form  
of vitamin B9 and that's used in

0bef320b-521b-4e64-b28b-22d60d1c93b2-4  
00:42:14.680 --> 00:42:18.292  
multivitamins, prenatal vitamins  
or single supplementation, and

0bef320b-521b-4e64-b28b-22d60d1c93b2-5  
00:42:18.292 --> 00:42:21.735  
and as previously mentioned,  
fortified foods. Unfortunately,

0bef320b-521b-4e64-b28b-22d60d1c93b2-6  
00:42:21.735 --> 00:42:25.121  
that there has been a negative

connotation that has kind of

0bef320b-521b-4e64-b28b-22d60d1c93b2-7  
00:42:25.121 --> 00:42:28.733  
been pushed by those who are not  
in favor of folic acid to make

0bef320b-521b-4e64-b28b-22d60d1c93b2-8  
00:42:28.733 --> 00:42:32.120  
synthetic a bad word, and one of  
the things that we try to.

2cc40315-a8f4-42ff-90aa-bbe5c3609123-0  
00:42:32.190 --> 00:42:35.342  
Addresses that it's not doesn't  
mean that it's inferior to

2cc40315-a8f4-42ff-90aa-bbe5c3609123-1  
00:42:35.342 --> 00:42:38.175  
natural food. Folate for  
supplementation, or in, you

2cc40315-a8f4-42ff-90aa-bbe5c3609123-2  
00:42:38.175 --> 00:42:41.701  
know, it's not necessarily a bad  
thing to be synthetic. The other

2cc40315-a8f4-42ff-90aa-bbe5c3609123-3  
00:42:41.701 --> 00:42:44.694  
types of folate other than folic  
acid that are found in

2cc40315-a8f4-42ff-90aa-bbe5c3609123-4  
00:42:44.694 --> 00:42:48.221  
supplements, the most common one  
would be 5 MTHF or methylfolate.

2cc40315-a8f4-42ff-90aa-bbe5c3609123-5  
00:42:48.221 --> 00:42:51.641  
And I just my most recent shirt  
search showed that there are up

2cc40315-a8f4-42ff-90aa-bbe5c3609123-6  
00:42:51.641 --> 00:42:55.061  
to 20 different forms of folate  
found in supplements, including

2cc40315-a8f4-42ff-90aa-bbe5c3609123-7  
00:42:55.061 --> 00:42:58.534  
prenatal vitamins. So it can get  
very confusing. But regardless,

2cc40315-a8f4-42ff-90aa-bbe5c3609123-8  
00:42:58.534 --> 00:43:01.901  
if they're in a supplement or  
multivitamin, they are different

2cc40315-a8f4-42ff-90aa-bbe5c3609123-9  
00:43:01.901 --> 00:43:02.810  
from the folates.

c837f4a9-c520-4095-9403-e01130683ab2-0  
00:43:02.890 --> 00:43:06.297  
And fruits and vegetables, even  
if the then nutrition label says

c837f4a9-c520-4095-9403-e01130683ab2-1  
00:43:06.297 --> 00:43:09.704  
natural food folate, which a lot  
of times those those supplement

c837f4a9-c520-4095-9403-e01130683ab2-2  
00:43:09.704 --> 00:43:12.220  
labels and and nutrition facts  
labels will say.

f85bccbe-39ff-45e5-97ff-dc144f8aaf95-0  
00:43:12.910 --> 00:43:13.470  
Next slide.

01adb8f9-bae0-4c10-8ce6-1171d20df976-0  
00:43:15.070 --> 00:43:18.671  
OK. How do I know if my prenatal  
vitamin has enough folic acid?

01adb8f9-bae0-4c10-8ce6-1171d20df976-1  
00:43:18.671 --> 00:43:22.048  
And this was already talked  
about, but I'll just go over it

01adb8f9-bae0-4c10-8ce6-1171d20df976-2  
00:43:22.048 --> 00:43:25.481  
a little bit more. So we need to  
look as as January 2021 the

01adb8f9-bae0-4c10-8ce6-1171d20df976-3  
00:43:25.481 --> 00:43:29.027  
nutrition facts and supplement  
facts label did change, so it's

01adb8f9-bae0-4c10-8ce6-1171d20df976-4  
00:43:29.027 --> 00:43:32.066  
going to include micrograms of  
dietary folate, folate

01adb8f9-bae0-4c10-8ce6-1171d20df976-5  
00:43:32.066 --> 00:43:35.724  
equivalents and that's going to  
be the unit of measure that's on

01adb8f9-bae0-4c10-8ce6-1171d20df976-6  
00:43:35.724 --> 00:43:39.100  
these new labels. And the reason  
why that is is because the

01adb8f9-bae0-4c10-8ce6-1171d20df976-7  
00:43:39.100 --> 00:43:42.477  
measure of micrograms of dietary  
folate equivalents is used

01adb8f9-bae0-4c10-8ce6-1171d20df976-8  
00:43:42.477 --> 00:43:44.560  
because the body has an easier  
time.

9c374089-4882-45fb-bcea-592d2d1ec511-0  
00:43:44.630 --> 00:43:48.390  
Of absorbing folic acid, they  
then the natural food folates

9c374089-4882-45fb-bcea-592d2d1ec511-1  
00:43:48.390 --> 00:43:51.837  
next slide title refresh  
nutrition facts of supplement

9c374089-4882-45fb-bcea-592d2d1ec511-2  
00:43:51.837 --> 00:43:52.590  
facts label.

39fe7c30-ed53-4b95-9e84-a0cff29a4095-0  
00:43:53.760 --> 00:43:56.605  
And here is another  
representation from. I think

39fe7c30-ed53-4b95-9e84-a0cff29a4095-1  
00:43:56.605 --> 00:44:00.263  
this is from the the FDA showing  
how the Nutrition facts label

39fe7c30-ed53-4b95-9e84-a0cff29a4095-2  
00:44:00.263 --> 00:44:03.863  
has changed. So as previously  
mentioned a percent daily value

39fe7c30-ed53-4b95-9e84-a0cff29a4095-3  
00:44:03.863 --> 00:44:07.115  
or the DVD is shown for the  
total amount of folate in a

39fe7c30-ed53-4b95-9e84-a0cff29a4095-4  
00:44:07.115 --> 00:44:10.483  
product, whether it be the  
multivitamin, prenatal vitamin

39fe7c30-ed53-4b95-9e84-a0cff29a4095-5  
00:44:10.483 --> 00:44:14.257  
or single supplementation and if  
any and it also shows if any of

39fe7c30-ed53-4b95-9e84-a0cff29a4095-6  
00:44:14.257 --> 00:44:17.509

the total folate comes  
specifically from folic acid and

39fe7c30-ed53-4b95-9e84-a0cff29a4095-7  
00:44:17.509 --> 00:44:21.341  
if it does, it will be listed in  
parentheses under the DfE. So as

39fe7c30-ed53-4b95-9e84-a0cff29a4095-8  
00:44:21.341 --> 00:44:23.490  
you can see here or the green or  
#1.

b347a7ce-b54b-483d-bb9f-28c6df239281-0  
00:44:23.580 --> 00:44:26.643  
You will have the folate as  
shown in micrograms DF as a

b347a7ce-b54b-483d-bb9f-28c6df239281-1  
00:44:26.643 --> 00:44:29.762  
percent of the DVD and this  
underneath that is the folic

b347a7ce-b54b-483d-bb9f-28c6df239281-2  
00:44:29.762 --> 00:44:33.099  
acid shown in parentheses. And  
this is really important that

b347a7ce-b54b-483d-bb9f-28c6df239281-3  
00:44:33.099 --> 00:44:36.491  
individuals who are trying to  
conceive or pregnant, they know

b347a7ce-b54b-483d-bb9f-28c6df239281-4  
00:44:36.491 --> 00:44:39.938  
that they need to look for how  
much is in that parentheses and

b347a7ce-b54b-483d-bb9f-28c6df239281-5  
00:44:39.938 --> 00:44:43.276  
it has to specifically say folic  
acid. So if it does not say

b347a7ce-b54b-483d-bb9f-28c6df239281-6  
00:44:43.276 --> 00:44:46.668  
folic acid in parentheses, then  
that supplement does not have

b347a7ce-b54b-483d-bb9f-28c6df239281-7  
00:44:46.668 --> 00:44:47.269  
folic acid.

ad9efaf9-c2ec-401d-aa69-a7e7db96daf0-0  
00:44:48.200 --> 00:44:48.710  
Next slide.

f5a57707-48e6-46c0-b823-fb49550df274-0

00:44:51.790 --> 00:44:55.095  
Title. How do I know if my  
prenatal vitamin has folic acid?

f5a57707-48e6-46c0-b823-fb49550df274-1  
00:44:55.095 --> 00:44:58.070  
Again, this is just a  
reiteration you you got to make

f5a57707-48e6-46c0-b823-fb49550df274-2  
00:44:58.070 --> 00:45:01.376  
sure and I and I talked about  
this at length to look at the

f5a57707-48e6-46c0-b823-fb49550df274-3  
00:45:01.376 --> 00:45:04.737  
nutrition facts and supplement  
facts label to make sure that

f5a57707-48e6-46c0-b823-fb49550df274-4  
00:45:04.737 --> 00:45:08.042  
that it specifically says a  
folic acid and people are still

f5a57707-48e6-46c0-b823-fb49550df274-5  
00:45:08.042 --> 00:45:11.678  
confused by that. And I think as  
a technical care providers we we

f5a57707-48e6-46c0-b823-fb49550df274-6  
00:45:11.678 --> 00:45:15.260  
don't think that we need to even  
talk about this anymore because

f5a57707-48e6-46c0-b823-fb49550df274-7  
00:45:15.260 --> 00:45:18.675  
it should be common knowledge.  
But unfortunately it's not and

f5a57707-48e6-46c0-b823-fb49550df274-8  
00:45:18.675 --> 00:45:21.100  
in my opinion I think this has a  
lot to do.

4e964327-34f2-441c-ac8d-907f44dbfcd5-0  
00:45:21.170 --> 00:45:24.063  
With with what is on social  
media and the misinformation

4e964327-34f2-441c-ac8d-907f44dbfcd5-1  
00:45:24.063 --> 00:45:27.211  
regarding this and what some of  
what we call the social media

4e964327-34f2-441c-ac8d-907f44dbfcd5-2  
00:45:27.211 --> 00:45:30.257  
influencer influencers are

talking saying about folic acid.

4e964327-34f2-441c-ac8d-907f44dbfcd5-3  
00:45:30.257 --> 00:45:33.303  
So they the average individual  
will get confused about what

4e964327-34f2-441c-ac8d-907f44dbfcd5-4  
00:45:33.303 --> 00:45:36.603  
they're supposed to see and they  
might see just folate and think

4e964327-34f2-441c-ac8d-907f44dbfcd5-5  
00:45:36.603 --> 00:45:39.649  
it's OK because they're supposed  
to be taking extra folate,

4e964327-34f2-441c-ac8d-907f44dbfcd5-6  
00:45:39.649 --> 00:45:42.745  
whereas there's no folic acid as  
the specific form of folate

4e964327-34f2-441c-ac8d-907f44dbfcd5-7  
00:45:42.745 --> 00:45:45.487  
that's in that supplement. So  
it's still important as

4e964327-34f2-441c-ac8d-907f44dbfcd5-8  
00:45:45.487 --> 00:45:48.736  
obstetrical care providers that  
we explicitly say that whatever

4e964327-34f2-441c-ac8d-907f44dbfcd5-9  
00:45:48.736 --> 00:45:50.309  
supplementation they're taking.

029459a5-b306-46ec-8391-e5f39f2a9550-0  
00:45:51.190 --> 00:45:54.482  
This, that supplement label or  
fact nutrition facts label needs

029459a5-b306-46ec-8391-e5f39f2a9550-1  
00:45:54.482 --> 00:45:56.900  
to say folic acid and  
parentheses. Next slide.

87b91f53-60cd-4880-85a8-c43b020ddcf3-0  
00:45:58.490 --> 00:46:01.946  
OK. Do I need high dose folic  
acid supplementation? That's

87b91f53-60cd-4880-85a8-c43b020ddcf3-1  
00:46:01.946 --> 00:46:05.695  
another very common question. So  
what we know is that from ACOG

87b91f53-60cd-4880-85a8-c43b020ddcf3-2



00:46:05.695 --> 00:46:08.741  
and also CDC, those who need  
high dose supplements,

87b91f53-60cd-4880-85a8-c43b020ddcf3-3  
00:46:08.741 --> 00:46:12.432  
supplementation with folic acid  
would include if either parent

87b91f53-60cd-4880-85a8-c43b020ddcf3-4  
00:46:12.432 --> 00:46:15.830  
has had a neural tube defect  
themselves or if they have a

87b91f53-60cd-4880-85a8-c43b020ddcf3-5  
00:46:15.830 --> 00:46:19.345  
child that had a neural tube  
defect. So in those cases that

87b91f53-60cd-4880-85a8-c43b020ddcf3-6  
00:46:19.345 --> 00:46:23.211  
would be considered a high risk,  
high risk risk factor for neural

87b91f53-60cd-4880-85a8-c43b020ddcf3-7  
00:46:23.211 --> 00:46:26.844  
2 defects. And if someone is not  
actively trying to conceive,

87b91f53-60cd-4880-85a8-c43b020ddcf3-8  
00:46:26.844 --> 00:46:28.250  
they should consume 400.

34e6e5a8-4d26-4b41-8b0c-160cffb4421c-0  
00:46:28.330 --> 00:46:31.200  
Programs of folic acid  
supplementation daily, but if

34e6e5a8-4d26-4b41-8b0c-160cffb4421c-1  
00:46:31.200 --> 00:46:34.287  
they are actually actively  
trying to conceive, then they

34e6e5a8-4d26-4b41-8b0c-160cffb4421c-2  
00:46:34.287 --> 00:46:37.537  
need to bump that up to 4000  
micrograms for that. That high

34e6e5a8-4d26-4b41-8b0c-160cffb4421c-3  
00:46:37.537 --> 00:46:40.678  
risk category, and that can  
start anywhere between one to

34e6e5a8-4d26-4b41-8b0c-160cffb4421c-4  
00:46:40.678 --> 00:46:43.548  
three months prior to  
conception. A cog has recently

34e6e5a8-4d26-4b41-8b0c-160cffb4421c-5  
00:46:43.548 --> 00:46:46.960  
recommended three months prior  
to conception and that needs to

34e6e5a8-4d26-4b41-8b0c-160cffb4421c-6  
00:46:46.960 --> 00:46:50.318  
continue at least through the  
first three months of pregnancy

34e6e5a8-4d26-4b41-8b0c-160cffb4421c-7  
00:46:50.318 --> 00:46:53.351  
or throughout the first  
trimester or 12 weeks, 12 to 14

34e6e5a8-4d26-4b41-8b0c-160cffb4421c-8  
00:46:53.351 --> 00:46:56.763  
weeks of pregnancy, after which  
you can drop it down back down

34e6e5a8-4d26-4b41-8b0c-160cffb4421c-9  
00:46:56.763 --> 00:46:58.280  
to the 400 micrograms daily.

7ed8c1b7-f305-4a9d-910b-279c45d00c9a-0  
00:46:58.380 --> 00:47:01.615  
And that's because after the  
first trimester, the reason for

7ed8c1b7-f305-4a9d-910b-279c45d00c9a-1  
00:47:01.615 --> 00:47:04.850  
needing that high dose is no  
longer there because the neural

7ed8c1b7-f305-4a9d-910b-279c45d00c9a-2  
00:47:04.850 --> 00:47:08.191  
tube is closed. And there's also  
there's, as mentioned before,

7ed8c1b7-f305-4a9d-910b-279c45d00c9a-3  
00:47:08.191 --> 00:47:11.426  
there are a lot of risk factors  
are things that can increase

7ed8c1b7-f305-4a9d-910b-279c45d00c9a-4  
00:47:11.426 --> 00:47:14.714  
one's risk of having a neural  
tube defect. But as I said that

7ed8c1b7-f305-4a9d-910b-279c45d00c9a-5  
00:47:14.714 --> 00:47:17.684  
what's considered high risk is  
if either parent has had

7ed8c1b7-f305-4a9d-910b-279c45d00c9a-6  
00:47:17.684 --> 00:47:20.972

enrolled to defect or they have  
a child that has had a neural

7ed8c1b7-f305-4a9d-910b-279c45d00c9a-7  
00:47:20.972 --> 00:47:23.677  
tube defect, next slide, a table  
titled folic acid

7ed8c1b7-f305-4a9d-910b-279c45d00c9a-8  
00:47:23.677 --> 00:47:26.170  
supplementation, recommendation  
by indication.

d7d242d4-8f70-46f5-8f1e-b8710f05cbc7-0  
00:47:27.130 --> 00:47:30.471  
Now I'm a I'm a big fan of up to  
date. It's it's really, really

d7d242d4-8f70-46f5-8f1e-b8710f05cbc7-1  
00:47:30.471 --> 00:47:33.760  
has some really good evidence  
space and they really keep up to

d7d242d4-8f70-46f5-8f1e-b8710f05cbc7-2  
00:47:33.760 --> 00:47:36.998  
date up to up to date on the  
science. So I just recently came

d7d242d4-8f70-46f5-8f1e-b8710f05cbc7-3  
00:47:36.998 --> 00:47:40.339  
across this table here which is  
actually very good. So it gives

d7d242d4-8f70-46f5-8f1e-b8710f05cbc7-4  
00:47:40.339 --> 00:47:43.107  
you the indication for  
supplementation then how much

d7d242d4-8f70-46f5-8f1e-b8710f05cbc7-5  
00:47:43.107 --> 00:47:46.344  
the daily dose should be, when  
to start it and how long to to

d7d242d4-8f70-46f5-8f1e-b8710f05cbc7-6  
00:47:46.344 --> 00:47:49.529  
to continue it and then who is  
who it's recommended by. So I

d7d242d4-8f70-46f5-8f1e-b8710f05cbc7-7  
00:47:49.529 --> 00:47:52.609  
won't go over the high risk  
category there because you can

d7d242d4-8f70-46f5-8f1e-b8710f05cbc7-8  
00:47:52.609 --> 00:47:55.794  
see it's pretty much what I've  
already went over. But that's

d7d242d4-8f70-46f5-8f1e-b8710f05cbc7-9  
00:47:55.794 --> 00:47:57.100  
also that's supported by.

d9fabb0e-b8f4-4393-b724-fe771a287168-0  
00:47:57.220 --> 00:48:01.357  
So do you see an ACOG then the  
SGC has this moderate risk

d9fabb0e-b8f4-4393-b724-fe771a287168-1  
00:48:01.357 --> 00:48:05.779  
category, ACOG does not, but  
they at the SGC do does and they

d9fabb0e-b8f4-4393-b724-fe771a287168-2  
00:48:05.779 --> 00:48:10.344  
include things such as type one  
or type 2 diabetes, maternal, a

d9fabb0e-b8f4-4393-b724-fe771a287168-3  
00:48:10.344 --> 00:48:14.481  
gastrointestinal malabsorption  
disorders or other medical

d9fabb0e-b8f4-4393-b724-fe771a287168-4  
00:48:14.481 --> 00:48:18.690  
conditions that could include  
that could increase the risk

d9fabb0e-b8f4-4393-b724-fe771a287168-5  
00:48:18.690 --> 00:48:23.398  
like advanced liver disease. And  
for the most part they recommend

d9fabb0e-b8f4-4393-b724-fe771a287168-6  
00:48:23.398 --> 00:48:27.249  
having 11 milligram or 1000  
micrograms of folic acid.

23b51b57-ea81-40fe-bc2a-392f3453c0cd-0  
00:48:27.430 --> 00:48:30.603  
Starting three months prior to  
conceiving and then continuing

23b51b57-ea81-40fe-bc2a-392f3453c0cd-1  
00:48:30.603 --> 00:48:33.828  
throughout the 1st 12 weeks of  
pregnancy, again, ACOG does not

23b51b57-ea81-40fe-bc2a-392f3453c0cd-2  
00:48:33.828 --> 00:48:36.796  
have this intermediate or  
moderate risk category and then

23b51b57-ea81-40fe-bc2a-392f3453c0cd-3  
00:48:36.796 --> 00:48:39.458

the low risk is pretty much  
universal as previously

23b51b57-ea81-40fe-bc2a-392f3453c0cd-4  
00:48:39.458 --> 00:48:42.785  
mentioned. And that's for anyone  
who who has a uterus that could

23b51b57-ea81-40fe-bc2a-392f3453c0cd-5  
00:48:42.785 --> 00:48:45.856  
potentially get pregnant, anyone  
of reproductive age, it is

23b51b57-ea81-40fe-bc2a-392f3453c0cd-6  
00:48:45.856 --> 00:48:48.978  
recommended that they consume,  
they have a 400 micrograms of

23b51b57-ea81-40fe-bc2a-392f3453c0cd-7  
00:48:48.978 --> 00:48:52.356  
folic acid daily in the event of  
an unplanned pregnancy. And it's

23b51b57-ea81-40fe-bc2a-392f3453c0cd-8  
00:48:52.356 --> 00:48:55.530  
been reported that up to 50% of  
pregnancies are unplanned. So

23b51b57-ea81-40fe-bc2a-392f3453c0cd-9  
00:48:55.530 --> 00:48:57.680  
that's a large population of  
individuals.

1a81bbb2-af60-4665-bfbc-c4e600bfea20-0  
00:48:57.820 --> 00:49:00.963  
That should be encouraged to  
take folic acid daily, and this

1a81bbb2-af60-4665-bfbc-c4e600bfea20-1  
00:49:00.963 --> 00:49:03.849  
doesn't need to be addressed  
just by OBGYN's. It can be

1a81bbb2-af60-4665-bfbc-c4e600bfea20-2  
00:49:03.849 --> 00:49:06.735  
addressed by any healthcare  
professional that is seeing

1a81bbb2-af60-4665-bfbc-c4e600bfea20-3  
00:49:06.735 --> 00:49:09.879  
someone of reproductive age. So  
we need to kind of make sure

1a81bbb2-af60-4665-bfbc-c4e600bfea20-4  
00:49:09.879 --> 00:49:13.126  
that we are all looking out for  
these patients and encouraging

1a81bbb2-af60-4665-bfbc-c4e600bfea20-5  
00:49:13.126 --> 00:49:16.270  
them to be on their appropriate  
supplementation. Next slide.

2ce73205-2741-461b-b6f4-3eeb9946e280-0  
00:49:18.510 --> 00:49:22.156  
OK, does folic acid help with  
any other things in pregnancy?

2ce73205-2741-461b-b6f4-3eeb9946e280-1  
00:49:22.156 --> 00:49:26.102  
We do have some evidence that it  
could. So some of the congenital

2ce73205-2741-461b-b6f4-3eeb9946e280-2  
00:49:26.102 --> 00:49:29.689  
malformations like cleft lip,  
cleft palate, some congenital

2ce73205-2741-461b-b6f4-3eeb9946e280-3  
00:49:29.689 --> 00:49:33.335  
heart defects, limb reduction  
defects, urinary tract defects

2ce73205-2741-461b-b6f4-3eeb9946e280-4  
00:49:33.335 --> 00:49:36.205  
and even congenital  
hydrocephalus may be folate

2ce73205-2741-461b-b6f4-3eeb9946e280-5  
00:49:36.205 --> 00:49:40.031  
sensitive. And there's also some  
animal studies that provide us

2ce73205-2741-461b-b6f4-3eeb9946e280-6  
00:49:40.031 --> 00:49:43.618  
some experimental support for  
folic acid supplementation to

2ce73205-2741-461b-b6f4-3eeb9946e280-7  
00:49:43.618 --> 00:49:47.504  
reduce the risk of cleft lip and  
palate. If there's a concurrent

2ce73205-2741-461b-b6f4-3eeb9946e280-8  
00:49:47.504 --> 00:49:48.640  
exposure to Procar.

05ffbf39-44da-474e-9de6-185d8f65761f-0  
00:49:48.760 --> 00:49:52.836  
Procarbazine, which is a folic  
acid inhibitor. So there is some

05ffbf39-44da-474e-9de6-185d8f65761f-1  
00:49:52.836 --> 00:49:56.466

evidence there about certain  
congenital heart congenital

05ffbf39-44da-474e-9de6-185d8f65761f-2  
00:49:56.466 --> 00:50:00.287  
malformations that folic acid  
supplementation can also help

05ffbf39-44da-474e-9de6-185d8f65761f-3  
00:50:00.287 --> 00:50:04.045  
with. But again, acog's not  
quite there regarding that SGC

05ffbf39-44da-474e-9de6-185d8f65761f-4  
00:50:04.045 --> 00:50:08.057  
is more promoting that as far as  
taking extra folic acid. Next

05ffbf39-44da-474e-9de6-185d8f65761f-5  
00:50:08.057 --> 00:50:08.440  
slide.

02653308-5bee-48db-9b0a-b48915d38a02-0  
00:50:09.330 --> 00:50:12.910  
Continuing to answer, does folic  
acid help with other things in

02653308-5bee-48db-9b0a-b48915d38a02-1  
00:50:12.910 --> 00:50:13.470  
pregnancy?

782bb6a1-a0b0-4a94-87c0-54d5059aab3d-0  
00:50:14.680 --> 00:50:18.476  
And again, for the SSGC has  
recommended that a higher dose,

782bb6a1-a0b0-4a94-87c0-54d5059aab3d-1  
00:50:18.476 --> 00:50:21.955  
which would be they recommend  
1000 micrograms at Perry

782bb6a1-a0b0-4a94-87c0-54d5059aab3d-2  
00:50:21.955 --> 00:50:25.752  
Conceptional first trimester  
folic acid supplementation can

782bb6a1-a0b0-4a94-87c0-54d5059aab3d-3  
00:50:25.752 --> 00:50:29.864  
be considered for cleft lip and  
palate congenital heart defects,

782bb6a1-a0b0-4a94-87c0-54d5059aab3d-4  
00:50:29.864 --> 00:50:33.470  
limb reduction defects and  
urinary tract defects. If the

782bb6a1-a0b0-4a94-87c0-54d5059aab3d-5

00:50:33.470 --> 00:50:37.267  
the park either partner has a  
history of any of those or an

782bb6a1-a0b0-4a94-87c0-54d5059aab3d-6  
00:50:37.267 --> 00:50:40.999  
offspring or a first or second  
degree relative next slide.

cea4035a-6d8b-4ff1-8b00-f25c16ad7baf-0  
00:50:44.410 --> 00:50:48.375  
OK, this is a very, very, very  
hot topic on social media. What

cea4035a-6d8b-4ff1-8b00-f25c16ad7baf-1  
00:50:48.375 --> 00:50:52.277  
happens if I take too much folic  
acid isn't harmful and where

cea4035a-6d8b-4ff1-8b00-f25c16ad7baf-2  
00:50:52.277 --> 00:50:56.243  
this is coming from is a lot of  
the dieticians, nutritionists,

cea4035a-6d8b-4ff1-8b00-f25c16ad7baf-3  
00:50:56.243 --> 00:51:00.020  
naturopaths and functional  
medicine providers or doctors on

cea4035a-6d8b-4ff1-8b00-f25c16ad7baf-4  
00:51:00.020 --> 00:51:03.985  
social media are really, really  
pushing the narrative that too

cea4035a-6d8b-4ff1-8b00-f25c16ad7baf-5  
00:51:03.985 --> 00:51:07.762  
much folic acid is harmful and  
toxic and all the bad things

cea4035a-6d8b-4ff1-8b00-f25c16ad7baf-6  
00:51:07.762 --> 00:51:11.916  
that could potentially happen by  
taking it in pregnancy. And what

cea4035a-6d8b-4ff1-8b00-f25c16ad7baf-7  
00:51:11.916 --> 00:51:12.420  
we know.

eddc0605-27b7-4d54-8002-c9ad5138a67a-0  
00:51:12.510 --> 00:51:15.992  
Is that folic acid is considered  
non-toxic and even at very high

eddc0605-27b7-4d54-8002-c9ad5138a67a-1  
00:51:15.992 --> 00:51:19.420  
doses it does not collect in fat  
because it's water soluble. So



eddc0605-27b7-4d54-8002-c9ad5138a67a-2  
00:51:19.420 --> 00:51:22.581  
any amount of folic acid that is  
not used by the body goes

eddc0605-27b7-4d54-8002-c9ad5138a67a-3  
00:51:22.581 --> 00:51:25.849  
through the kidneys into the  
urine as and is excreted out of

eddc0605-27b7-4d54-8002-c9ad5138a67a-4  
00:51:25.849 --> 00:51:29.224  
the body. And when we do take  
extra folic acid, we're going to

eddc0605-27b7-4d54-8002-c9ad5138a67a-5  
00:51:29.224 --> 00:51:32.171  
have a certain amount of  
unmetabolized folic acid that

eddc0605-27b7-4d54-8002-c9ad5138a67a-6  
00:51:32.171 --> 00:51:35.706  
can accumulate in the serum. But  
studies in both non pregnant and

eddc0605-27b7-4d54-8002-c9ad5138a67a-7  
00:51:35.706 --> 00:51:38.867  
pregnant persons showed that  
folic acid doses greater than

eddc0605-27b7-4d54-8002-c9ad5138a67a-8  
00:51:38.867 --> 00:51:42.349  
800 to 1000 micrograms a day can  
result in detectable levels of.

f7a50e0d-9e0f-4ea6-942f-79f9c4d9a927-0  
00:51:42.570 --> 00:51:47.117  
You, you, MFA or unmetabolized,  
folic acid and both maternal and

f7a50e0d-9e0f-4ea6-942f-79f9c4d9a927-1  
00:51:47.117 --> 00:51:51.034  
fetal samples. However, the risk  
of these from having a

f7a50e0d-9e0f-4ea6-942f-79f9c4d9a927-2  
00:51:51.034 --> 00:51:55.372  
metabolized folic acid is very  
we found no adverse effects of

f7a50e0d-9e0f-4ea6-942f-79f9c4d9a927-3  
00:51:55.372 --> 00:51:58.659  
that because it is excreted into  
the urine so.

88685ff3-656f-4c5a-bf74-1cb84a01df7c-0

00:51:59.720 --> 00:52:03.053  
Again, this is a very hot topic  
on social media, and like it or

88685ff3-656f-4c5a-bf74-1cb84a01df7c-1  
00:52:03.053 --> 00:52:06.438  
not, our patients are getting a  
lot of their medical information

88685ff3-656f-4c5a-bf74-1cb84a01df7c-2  
00:52:06.438 --> 00:52:09.563  
from social media and these  
influencers and other providers

88685ff3-656f-4c5a-bf74-1cb84a01df7c-3  
00:52:09.563 --> 00:52:12.688  
can be very convincing. So we  
have to be prepared to answer

88685ff3-656f-4c5a-bf74-1cb84a01df7c-4  
00:52:12.688 --> 00:52:14.980  
these questions because they're  
getting it.

241d0aa5-499b-4aed-8623-fbef7a7f0975-0  
00:52:15.600 --> 00:52:18.357  
Pretty much anytime they go on  
social media that this folic

241d0aa5-499b-4aed-8623-fbef7a7f0975-1  
00:52:18.357 --> 00:52:21.345  
acid is harmful and to stay away  
from it, especially if you have

241d0aa5-499b-4aed-8623-fbef7a7f0975-2  
00:52:21.345 --> 00:52:24.240  
the MTHFR gene variants which  
we've already previously touched

241d0aa5-499b-4aed-8623-fbef7a7f0975-3  
00:52:24.240 --> 00:52:24.930  
on. Next slide.

a90c827a-3211-4b9a-8a27-fcec069e9a35-0  
00:52:27.130 --> 00:52:30.362  
Can I still take folic acid if I  
had an integer MTHFR gene

a90c827a-3211-4b9a-8a27-fcec069e9a35-1  
00:52:30.362 --> 00:52:33.978  
variant? And again this is where  
this all starts in my opinion is

a90c827a-3211-4b9a-8a27-fcec069e9a35-2  
00:52:33.978 --> 00:52:37.429  
people have MTHFR gene variants.  
Just about anybody who does a

a90c827a-3211-4b9a-8a27-fcec069e9a35-3  
00:52:37.429 --> 00:52:40.880  
DNA or ancestry test is going to  
know they have this, and then

a90c827a-3211-4b9a-8a27-fcec069e9a35-4  
00:52:40.880 --> 00:52:44.058  
it's being told to them that  
they cannot take folic acid.

a90c827a-3211-4b9a-8a27-fcec069e9a35-5  
00:52:44.058 --> 00:52:47.619  
Their body can't utilize it. It  
was toxic to them, so they can't

a90c827a-3211-4b9a-8a27-fcec069e9a35-6  
00:52:47.619 --> 00:52:51.070  
take it in pregnancy. But this  
is simply not true and we don't

a90c827a-3211-4b9a-8a27-fcec069e9a35-7  
00:52:51.070 --> 00:52:53.809  
need to even prescribe higher  
doses of folic acid

a90c827a-3211-4b9a-8a27-fcec069e9a35-8  
00:52:53.809 --> 00:52:56.329  
supplementation if a patient  
does have MTHFR.

76caf5ba-174e-45c4-a31c-d54d40953380-0  
00:52:56.440 --> 00:52:58.909  
Invariance, so the the  
recommended universal

76caf5ba-174e-45c4-a31c-d54d40953380-1  
00:52:58.909 --> 00:53:02.312  
prophylaxis to 400 micrograms  
still holds for them. And we've

76caf5ba-174e-45c4-a31c-d54d40953380-2  
00:53:02.312 --> 00:53:05.715  
already talked about this and  
testing for MTHFR gene variants

76caf5ba-174e-45c4-a31c-d54d40953380-3  
00:53:05.715 --> 00:53:08.953  
is not even necessary to guide  
what we recommend regarding

76caf5ba-174e-45c4-a31c-d54d40953380-4  
00:53:08.953 --> 00:53:12.192  
folic acid supplementation,  
because it doesn't matter what

76caf5ba-174e-45c4-a31c-d54d40953380-5

00:53:12.192 --> 00:53:15.649  
their gene variant is. The 400  
micrograms daily is still going

76caf5ba-174e-45c4-a31c-d54d40953380-6  
00:53:15.649 --> 00:53:18.778  
to be enough to raise the the  
blood folate levels to the

76caf5ba-174e-45c4-a31c-d54d40953380-7  
00:53:18.778 --> 00:53:20.369  
necessary levels. Next slide.

dd8f4f82-46f9-4b69-9e6e-664381779af6-0  
00:53:22.550 --> 00:53:24.510  
Margene variant and folic acid.

8aa5ee99-6577-4ee9-8b72-3dbb656445a5-0  
00:53:25.660 --> 00:53:28.588  
So the bottom line is this.  
There are no obstetrical

8aa5ee99-6577-4ee9-8b72-3dbb656445a5-1  
00:53:28.588 --> 00:53:31.958  
indications for testing. Anyone  
who is trying to conceive or

8aa5ee99-6577-4ee9-8b72-3dbb656445a5-2  
00:53:31.958 --> 00:53:35.550  
pregnant for MTHFR gene grants,  
despite the fact that it's being

8aa5ee99-6577-4ee9-8b72-3dbb656445a5-3  
00:53:35.550 --> 00:53:39.030  
done and studies have shown that  
a person who consumes the 400

8aa5ee99-6577-4ee9-8b72-3dbb656445a5-4  
00:53:39.030 --> 00:53:42.180  
micrograms daily does have  
enough blood does have enough

8aa5ee99-6577-4ee9-8b72-3dbb656445a5-5  
00:53:42.180 --> 00:53:45.384  
fully in their blood to help  
prevent neural tube defects,

8aa5ee99-6577-4ee9-8b72-3dbb656445a5-6  
00:53:45.384 --> 00:53:48.755  
regardless of their MTHFR gene  
variant status. So we have to

8aa5ee99-6577-4ee9-8b72-3dbb656445a5-7  
00:53:48.755 --> 00:53:51.683  
really reiterate that. But in  
the MTHFR gene variant

8aa5ee99-6577-4ee9-8b72-3dbb656445a5-8  
00:53:51.683 --> 00:53:54.777  
community, it's very, very  
ingrained in them, very much

8aa5ee99-6577-4ee9-8b72-3dbb656445a5-9  
00:53:54.777 --> 00:53:55.330  
ingrained.

f8e2b0ac-9026-4269-ae33-401945ec08d9-0  
00:53:55.560 --> 00:53:58.748  
That they cannot take folic acid  
and this is not coming largely

f8e2b0ac-9026-4269-ae33-401945ec08d9-1  
00:53:58.748 --> 00:54:01.886  
from obstetrical care providers.  
It's coming from the people I

f8e2b0ac-9026-4269-ae33-401945ec08d9-2  
00:54:01.886 --> 00:54:04.676  
mentioned previously like  
dietitians, nutritionists and

f8e2b0ac-9026-4269-ae33-401945ec08d9-3  
00:54:04.676 --> 00:54:07.814  
natural paths, and they make a  
very convincing argument. And I

f8e2b0ac-9026-4269-ae33-401945ec08d9-4  
00:54:07.814 --> 00:54:10.754  
and I understand that when  
someone has a medical condition

f8e2b0ac-9026-4269-ae33-401945ec08d9-5  
00:54:10.754 --> 00:54:13.344  
and they think it could be  
because of an MTHFR gene

f8e2b0ac-9026-4269-ae33-401945ec08d9-6  
00:54:13.344 --> 00:54:16.283  
variant, it's it's hard to  
convince them otherwise. But we

f8e2b0ac-9026-4269-ae33-401945ec08d9-7  
00:54:16.283 --> 00:54:19.173  
have to keep talking about this  
and educating so that our

f8e2b0ac-9026-4269-ae33-401945ec08d9-8  
00:54:19.173 --> 00:54:22.311  
pregnant and trying to conceive  
individuals know that they can

f8e2b0ac-9026-4269-ae33-401945ec08d9-9  
00:54:22.311 --> 00:54:25.450  
take folic acid regardless of

what their gene grant status is.

375514b0-fd77-45f1-8b33-93a48825dd0b-0  
00:54:25.550 --> 00:54:26.250  
Next slide.

012906ed-b6a6-463f-8708-d44d06ebe95c-0  
00:54:27.790 --> 00:54:31.226  
My provider said folic acid is  
cheap and that I need to take

012906ed-b6a6-463f-8708-d44d06ebe95c-1  
00:54:31.226 --> 00:54:34.606  
this expensive prenatal vitamin.  
I called them the designer

012906ed-b6a6-463f-8708-d44d06ebe95c-2  
00:54:34.606 --> 00:54:37.986  
prenatal vitamins and despite  
the scientific consensus by I

012906ed-b6a6-463f-8708-d44d06ebe95c-3  
00:54:37.986 --> 00:54:41.141  
think the last I counted 20 to  
22 medical organizations

012906ed-b6a6-463f-8708-d44d06ebe95c-4  
00:54:41.141 --> 00:54:44.521  
societies that recommend folic  
acid supplementation for the

012906ed-b6a6-463f-8708-d44d06ebe95c-5  
00:54:44.521 --> 00:54:48.126  
prevention of all two defects.  
Despite all of that information,

012906ed-b6a6-463f-8708-d44d06ebe95c-6  
00:54:48.126 --> 00:54:51.281  
there are some healthcare  
professionals that still tell

012906ed-b6a6-463f-8708-d44d06ebe95c-7  
00:54:51.281 --> 00:54:54.773  
people not to take folic acid,  
and so medical experts such as

012906ed-b6a6-463f-8708-d44d06ebe95c-8  
00:54:54.773 --> 00:54:57.140  
myself and all of us here, we  
worry that.

1e37ef2d-1612-469d-81b0-b1ca08bbb626-0  
00:54:57.280 --> 00:55:00.441  
These recommendations are  
causing people to avoid the

1e37ef2d-1612-469d-81b0-b1ca08bbb626-1

00:55:00.441 --> 00:55:03.955  
necessary folic acid to prevent  
neural tube defects and the

1e37ef2d-1612-469d-81b0-b1ca08bbb626-2  
00:55:03.955 --> 00:55:07.351  
bottom line is that folic acid  
is the only form of folate

1e37ef2d-1612-469d-81b0-b1ca08bbb626-3  
00:55:07.351 --> 00:55:10.630  
proven to help prevent neural  
tube defects. Next slide.

bc9209e0-08ee-40ee-b3fd-d350feaf902a-0  
00:55:13.700 --> 00:55:19.097  
Title. Thank you, Shannon and  
Clark MD. Website URL

bc9209e0-08ee-40ee-b3fd-d350feaf902a-1  
00:55:19.097 --> 00:55:23.560  
[www.babiesafter35.com](http://www.babiesafter35.com) uses the  
numeral 35.

4e701364-8187-4d6b-b8c4-e40a65cb4d49-0  
00:55:24.630 --> 00:55:27.533  
That's all that I have, and  
those are the most commonly

4e701364-8187-4d6b-b8c4-e40a65cb4d49-1  
00:55:27.533 --> 00:55:30.850  
asked questions I get. So thank  
you for your time. And who's up

4e701364-8187-4d6b-b8c4-e40a65cb4d49-2  
00:55:30.850 --> 00:55:31.110  
next?

50031802-0884-4a0a-bdc1-8a0821eb6277-0  
00:55:32.620 --> 00:55:36.847  
Next slide, questions and  
answers. Speaker Amanda Cone,

50031802-0884-4a0a-bdc1-8a0821eb6277-1  
00:55:36.847 --> 00:55:40.924  
Doctor Clark and Captain  
Williams, thank you so much.

50031802-0884-4a0a-bdc1-8a0821eb6277-2  
00:55:40.924 --> 00:55:45.680  
That was an incredible overview.  
I learned a lot and thank you

50031802-0884-4a0a-bdc1-8a0821eb6277-3  
00:55:45.680 --> 00:55:50.134  
for those important tips to  
support patients and the whole

50031802-0884-4a0a-bdc1-8a0821eb6277-4  
00:55:50.134 --> 00:55:54.362  
medical team and addressing  
these questions about folic

50031802-0884-4a0a-bdc1-8a0821eb6277-5  
00:55:54.362 --> 00:55:54.740  
acid.

a5269ef0-2da8-406a-8a35-515539c342b0-0  
00:55:55.500 --> 00:55:59.475  
So next we will begin our  
question and answer session. We

a5269ef0-2da8-406a-8a35-515539c342b0-1  
00:55:59.475 --> 00:56:03.587  
may not get to every question,  
but we'll address as many as

a5269ef0-2da8-406a-8a35-515539c342b0-2  
00:56:03.587 --> 00:56:04.410  
time allows.

2c5a8aa6-035c-40e3-8666-6deb1d196111-0  
00:56:05.780 --> 00:56:10.100  
So as questions and please feel  
free to put any questions you

2c5a8aa6-035c-40e3-8666-6deb1d196111-1  
00:56:10.100 --> 00:56:14.490  
may have in the Q&A chat,  
but ask questions are coming in,

2c5a8aa6-035c-40e3-8666-6deb1d196111-2  
00:56:14.490 --> 00:56:18.740  
I'm going to start with one for  
Captain Williams. Does folic

2c5a8aa6-035c-40e3-8666-6deb1d196111-3  
00:56:18.740 --> 00:56:21.109  
acid mask vitamin B12  
deficiency?

d964bc54-a0fb-46a6-ad2e-80d9d27c4dad-0  
00:56:25.340 --> 00:56:27.010  
I am on mute. Sorry about that.

c279e5c9-a7fb-4d5d-9d19-aebb6a466637-0  
00:56:28.810 --> 00:56:32.890  
Well, the the short answer is  
that we have new laboratory

c279e5c9-a7fb-4d5d-9d19-aebb6a466637-1  
00:56:32.890 --> 00:56:37.464  
tests that can readily measure a  
person's vitamin B12 status. So



c279e5c9-a7fb-4d5d-9d19-aebb6a466637-2  
00:56:37.464 --> 00:56:41.967  
what this means that vitamin B12  
deficiency can be detected and

c279e5c9-a7fb-4d5d-9d19-aebb6a466637-3  
00:56:41.967 --> 00:56:46.259  
diagnosed quite easily. It also  
means that not being able to

c279e5c9-a7fb-4d5d-9d19-aebb6a466637-4  
00:56:46.259 --> 00:56:50.199  
identify the anemia caused by  
vitamin B12 deficiency as

c279e5c9-a7fb-4d5d-9d19-aebb6a466637-5  
00:56:50.199 --> 00:56:54.420  
described in those early case  
reports is really unlikely to

c279e5c9-a7fb-4d5d-9d19-aebb6a466637-6  
00:56:54.420 --> 00:56:58.149  
remain an issue. There is a  
recent population based.

40202268-7027-46ff-a5e4-3f91bc444a36-0  
00:56:58.600 --> 00:57:02.658  
Study that examined anemia among  
people with vitamin B12

40202268-7027-46ff-a5e4-3f91bc444a36-1  
00:57:02.658 --> 00:57:07.002  
deficiency before and after  
folic acid fortification, and it

40202268-7027-46ff-a5e4-3f91bc444a36-2  
00:57:07.002 --> 00:57:11.631  
really found that folic acid did  
not delay the identification of

40202268-7027-46ff-a5e4-3f91bc444a36-3  
00:57:11.631 --> 00:57:15.334  
B12 deficiency after  
fortification began. So and so

40202268-7027-46ff-a5e4-3f91bc444a36-4  
00:57:15.334 --> 00:57:19.606  
again, you know, if you are  
ordering the standard, you know

40202268-7027-46ff-a5e4-3f91bc444a36-5  
00:57:19.606 --> 00:57:24.163  
the the standard accepted tests  
for looking at vitamin B12, you

40202268-7027-46ff-a5e4-3f91bc444a36-6

00:57:24.163 --> 00:57:28.436  
know, looking for vitamin B12  
deficiency, the folate status

40202268-7027-46ff-a5e4-3f91bc444a36-7  
00:57:28.436 --> 00:57:28.650  
is.

9aed6ef2-c8cc-4eac-a8a1-6e6d58b7c7e7-0  
00:57:28.720 --> 00:57:29.700  
Not going to affect that.

af32d628-55d2-4d11-b6e9-f1312e2a107f-0  
00:57:30.380 --> 00:57:30.730  
Ever.

ba658cfc-bdd5-44e2-bd0a-73861c4cfb62-0  
00:57:31.880 --> 00:57:37.182  
Great. OK. This next question is  
for Doctor Clark and this is a

ba658cfc-bdd5-44e2-bd0a-73861c4cfb62-1  
00:57:37.182 --> 00:57:42.484  
complicated question. Is there  
an increased risk in autism with

ba658cfc-bdd5-44e2-bd0a-73861c4cfb62-2  
00:57:42.484 --> 00:57:47.703  
folic acid intake? Yeah, that is  
also something I probably get

ba658cfc-bdd5-44e2-bd0a-73861c4cfb62-3  
00:57:47.703 --> 00:57:52.922  
messed about at least a few  
times a week, and I'll just give

ba658cfc-bdd5-44e2-bd0a-73861c4cfb62-4  
00:57:52.922 --> 00:57:57.976  
a brief overview of what the  
most recent evidence shows. And

ba658cfc-bdd5-44e2-bd0a-73861c4cfb62-5  
00:57:57.976 --> 00:58:01.869  
2017 the USPSTF did a review on  
the effect of.

a9ea4fd5-5c18-4c04-a6c0-4b4a609c65e1-0  
00:58:02.000 --> 00:58:05.177  
Effectiveness of folic acid  
supplementation for the

a9ea4fd5-5c18-4c04-a6c0-4b4a609c65e1-1  
00:58:05.177 --> 00:58:08.844  
prevention and roll 2 defects,  
but they also included a new

a9ea4fd5-5c18-4c04-a6c0-4b4a609c65e1-2

00:58:08.844 --> 00:58:12.450  
evidence on the benefits and  
harms of folic acid, and they

a9ea4fd5-5c18-4c04-a6c0-4b4a609c65e1-3  
00:58:12.450 --> 00:58:16.422  
found no reason to change any of  
the current guidelines for what

a9ea4fd5-5c18-4c04-a6c0-4b4a609c65e1-4  
00:58:16.422 --> 00:58:19.967  
we recommend for folic acid  
supplementation. There was no

a9ea4fd5-5c18-4c04-a6c0-4b4a609c65e1-5  
00:58:19.967 --> 00:58:23.328  
new evidence on any increased  
risk of harms, including

a9ea4fd5-5c18-4c04-a6c0-4b4a609c65e1-6  
00:58:23.328 --> 00:58:26.689  
neurodevelopmental issues in  
children, and then really

a9ea4fd5-5c18-4c04-a6c0-4b4a609c65e1-7  
00:58:26.689 --> 00:58:30.539  
recently in 2021, there's been  
two systematic reviews and meta

a9ea4fd5-5c18-4c04-a6c0-4b4a609c65e1-8  
00:58:30.539 --> 00:58:32.740  
analysis. One looked at folic  
acid.

ef0283d4-4e8b-4130-93fb-7244970c42cb-0  
00:58:33.340 --> 00:58:37.121  
Levels in the relation to autism  
spectrum disorder, they found no

ef0283d4-4e8b-4130-93fb-7244970c42cb-1  
00:58:37.121 --> 00:58:40.157  
increased risk of autism  
spectrum disorder and other

ef0283d4-4e8b-4130-93fb-7244970c42cb-2  
00:58:40.157 --> 00:58:43.709  
neurodevelopmental outcomes in  
children exposed to folic acid

ef0283d4-4e8b-4130-93fb-7244970c42cb-3  
00:58:43.709 --> 00:58:47.261  
supplementation and pregnancy.  
And then the next one, so that

ef0283d4-4e8b-4130-93fb-7244970c42cb-4  
00:58:47.261 --> 00:58:50.927  
that was it could improve it and

actually decrease the risk. So

ef0283d4-4e8b-4130-93fb-7244970c42cb-5  
00:58:50.927 --> 00:58:54.307  
the but bottom line with the  
what we have more recently on

ef0283d4-4e8b-4130-93fb-7244970c42cb-6  
00:58:54.307 --> 00:58:57.802  
these systemic reviews and meta  
analysis is that we it's not

ef0283d4-4e8b-4130-93fb-7244970c42cb-7  
00:58:57.802 --> 00:59:01.067  
going to cause any harm in it  
may even be beneficial. We

ef0283d4-4e8b-4130-93fb-7244970c42cb-8  
00:59:01.067 --> 00:59:03.130  
haven't seen anything that  
there's.

30f87cec-8186-4d60-8266-ae83e383a13d-0  
00:59:03.200 --> 00:59:06.491  
A link to increased risk, but  
again, there's a couple reasons

30f87cec-8186-4d60-8266-ae83e383a13d-1  
00:59:06.491 --> 00:59:09.463  
why I think this is happening.  
It's beneficial for some

30f87cec-8186-4d60-8266-ae83e383a13d-2  
00:59:09.463 --> 00:59:12.648  
individuals to spread that  
narrative which a lot of it's on

30f87cec-8186-4d60-8266-ae83e383a13d-3  
00:59:12.648 --> 00:59:15.780  
social, social media and then  
you know the the the fear of

30f87cec-8186-4d60-8266-ae83e383a13d-4  
00:59:15.780 --> 00:59:18.434  
just neurodevelopmental  
disorders in general from

30f87cec-8186-4d60-8266-ae83e383a13d-5  
00:59:18.434 --> 00:59:21.619  
individuals. And we have to  
understand that there is a real

30f87cec-8186-4d60-8266-ae83e383a13d-6  
00:59:21.619 --> 00:59:24.698  
fear and we have to answer  
questions regarding that, even

30f87cec-8186-4d60-8266-ae83e383a13d-7  
00:59:24.698 --> 00:59:27.777  
if it's a simple question, as  
does folic acid increase my

30f87cec-8186-4d60-8266-ae83e383a13d-8  
00:59:27.777 --> 00:59:31.015  
baby's risk of folic of autism?  
Because that is a legitimate

30f87cec-8186-4d60-8266-ae83e383a13d-9  
00:59:31.015 --> 00:59:34.360  
fear because they're getting.  
They're seeing this information.

09f8854d-ff2f-4f7b-a99a-d905843532ea-0  
00:59:34.450 --> 00:59:36.700  
Routinely, anytime they go on  
the Internet.

69c9fda2-232e-4ee0-9a4b-6ebfb421ca4d-0  
00:59:37.990 --> 00:59:41.116  
Thanks, doctor. Clark, I  
appreciate that answer. As a

69c9fda2-232e-4ee0-9a4b-6ebfb421ca4d-1  
00:59:41.116 --> 00:59:44.589  
pediatrician, I know that is one  
of the scariest things for

69c9fda2-232e-4ee0-9a4b-6ebfb421ca4d-2  
00:59:44.589 --> 00:59:47.600  
parents to face. And and you  
know, there's so much.

0805dca7-0b41-4917-a52e-005dd418ba98-0  
00:59:48.250 --> 00:59:53.029  
Information in this information  
out there, I just wanted to let

0805dca7-0b41-4917-a52e-005dd418ba98-1  
00:59:53.029 --> 00:59:57.137  
everyone know that we have a  
question. Do you have any

0805dca7-0b41-4917-a52e-005dd418ba98-2  
00:59:57.137 --> 01:00:01.543  
recommendations for health  
education and promotion in this

0805dca7-0b41-4917-a52e-005dd418ba98-3  
01:00:01.543 --> 01:00:06.099  
topic nowadays? And there's an  
answer if you go to answer it

0805dca7-0b41-4917-a52e-005dd418ba98-4  
01:00:06.099 --> 01:00:10.356

where we dropped some links to  
our website that has some

0805dca7-0b41-4917-a52e-005dd418ba98-5  
01:00:10.356 --> 01:00:15.136  
helpful information for health  
promotion around folic acid. And

0805dca7-0b41-4917-a52e-005dd418ba98-6  
01:00:15.136 --> 01:00:17.900  
we hope those materials are  
helpful.

807c2e15-18a6-40ab-8332-8688d3607c2a-0  
01:00:19.910 --> 01:00:20.810  
So.

bf993268-ed9-4cb9-83c7-3358700aa540-0  
01:00:22.670 --> 01:00:27.827  
I am going to go to the next  
question. I'll give this one to

bf993268-ed9-4cb9-83c7-3358700aa540-1  
01:00:27.827 --> 01:00:32.477  
you. Captain Williams is the 1  
milligram upper limit a

bf993268-ed9-4cb9-83c7-3358700aa540-2  
01:00:32.477 --> 01:00:37.634  
hindrance to people getting  
adequate folic acid? Sure. Well,

bf993268-ed9-4cb9-83c7-3358700aa540-3  
01:00:37.634 --> 01:00:42.707  
so the the the term tolerable  
upper level is defined by the

bf993268-ed9-4cb9-83c7-3358700aa540-4  
01:00:42.707 --> 01:00:47.864  
Institute of Medicine as the  
highest level of daily nutrient

bf993268-ed9-4cb9-83c7-3358700aa540-5  
01:00:47.864 --> 01:00:53.359  
intake that is likely to pose no  
risk of adverse health effects.

4b2baac7-7975-4faa-90a4-3a790c8f8384-0  
01:00:53.430 --> 01:00:57.750  
For almost all individuals in  
the general population. So. So

4b2baac7-7975-4faa-90a4-3a790c8f8384-1  
01:00:57.750 --> 01:01:02.354  
in 1998, the IOM set that upper  
level at 1000 micrograms per day

4b2baac7-7975-4faa-90a4-3a790c8f8384-2  
01:01:02.354 --> 01:01:06.604  
of folic acid, and that is  
coming from fortified foods with

4b2baac7-7975-4faa-90a4-3a790c8f8384-3  
01:01:06.604 --> 01:01:10.854  
folic acid and from vitamin  
supplements. And all though the

4b2baac7-7975-4faa-90a4-3a790c8f8384-4  
01:01:10.854 --> 01:01:15.104  
you know, the upper level is  
used more broadly, it's really

4b2baac7-7975-4faa-90a4-3a790c8f8384-5  
01:01:15.104 --> 01:01:19.637  
only intended to prevent people  
who don't know that they have a

4b2baac7-7975-4faa-90a4-3a790c8f8384-6  
01:01:19.637 --> 01:01:23.249  
vitamin deficiency of B12 from  
consuming too much.

509e2fac-b404-412f-ace1-bf9751ca5f2e-0  
01:01:23.450 --> 01:01:27.033  
Much folic acid. So no, it  
should not be. You know, it

509e2fac-b404-412f-ace1-bf9751ca5f2e-1  
01:01:27.033 --> 01:01:30.943  
should not be a hindrance. That  
one that 1000 micrograms of

509e2fac-b404-412f-ace1-bf9751ca5f2e-2  
01:01:30.943 --> 01:01:31.660  
folic acid.

1214f7a4-2452-4e0f-9622-468d703f4305-0  
01:01:35.190 --> 01:01:35.720  
Great.

b5bdf8d6-8979-4f3b-ac49-f87c3bd516ad-0  
01:01:36.900 --> 01:01:40.020  
And I I see a question I'm going  
to.

944fe621-baee-4460-8d28-e8815acd4cdb-0  
01:01:41.380 --> 01:01:45.660  
That read from uh Ramu kaladi. I  
hope I said your name correctly.

944fe621-baee-4460-8d28-e8815acd4cdb-1  
01:01:45.660 --> 01:01:49.616  
What about the misinformation  
that an NTD affected pregnancy

944fe621-baee-4460-8d28-e8815acd4cdb-2  
01:01:49.616 --> 01:01:53.377  
is not viable? This present  
pregnant presentation covered

944fe621-baee-4460-8d28-e8815acd4cdb-3  
01:01:53.377 --> 01:01:57.268  
that some childbearing age  
people cannot absorb folate well

944fe621-baee-4460-8d28-e8815acd4cdb-4  
01:01:57.268 --> 01:02:01.353  
and an NTD affected pregnancy  
still occurs, which we know they

944fe621-baee-4460-8d28-e8815acd4cdb-5  
01:02:01.353 --> 01:02:05.439  
still occur. This individual was  
born with spina bifida and is

944fe621-baee-4460-8d28-e8815acd4cdb-6  
01:02:05.439 --> 01:02:09.460  
currently a fully functioning  
adult who's gainfully employed.

944fe621-baee-4460-8d28-e8815acd4cdb-7  
01:02:09.460 --> 01:02:11.730  
So I I think if either one of  
you.

702693f3-c646-4f86-b809-f9484f9db0f9-0  
01:02:11.810 --> 01:02:16.564  
Address. Umm. You know? Yes, of  
course. We want to prevent uh

702693f3-c646-4f86-b809-f9484f9db0f9-1  
01:02:16.564 --> 01:02:21.472  
neural tube defects, but we also  
there's been so much improving

702693f3-c646-4f86-b809-f9484f9db0f9-2  
01:02:21.472 --> 01:02:26.379  
made that for an individual with  
an NTD Captain Williams do you

702693f3-c646-4f86-b809-f9484f9db0f9-3  
01:02:26.379 --> 01:02:27.760  
have any comments?

7781e3ce-669c-4906-86f4-f5562c0f3e5e-0  
01:02:28.990 --> 01:02:33.560  
Sure. And I you know I I do want  
to make sure that we are not

7781e3ce-669c-4906-86f4-f5562c0f3e5e-1  
01:02:33.560 --> 01:02:37.910



implying that folks that are  
born with spina bifida cannot

7781e3ce-669c-4906-86f4-f5562c0f3e5e-2  
01:02:37.910 --> 01:02:42.186  
lead healthy and productive  
lives. That is absolutely not

7781e3ce-669c-4906-86f4-f5562c0f3e5e-3  
01:02:42.186 --> 01:02:46.535  
true. And we do a, you know, a  
lot of work here in, in the

7781e3ce-669c-4906-86f4-f5562c0f3e5e-4  
01:02:46.535 --> 01:02:51.327  
National Center on birth defects  
and developmental disabilities,

7781e3ce-669c-4906-86f4-f5562c0f3e5e-5  
01:02:51.327 --> 01:02:55.824  
working with communities that,  
that, that have been affected

7781e3ce-669c-4906-86f4-f5562c0f3e5e-6  
01:02:55.824 --> 01:02:58.700  
with, you know, people that have  
been.

646fc975-dd82-478b-ba05-6fbbbd2f3bb-0  
01:02:58.800 --> 01:03:02.873  
Affected with with spina bifida  
and the spina Bifida

646fc975-dd82-478b-ba05-6fbbbd2f3bb-1  
01:03:02.873 --> 01:03:07.562  
Association, is a huge partner  
in in our work here in the in

646fc975-dd82-478b-ba05-6fbbbd2f3bb-2  
01:03:07.562 --> 01:03:12.096  
the center. I believe the  
confusion might have been around

646fc975-dd82-478b-ba05-6fbbbd2f3bb-3  
01:03:12.096 --> 01:03:16.478  
when I said when I said  
anencephaly, anencephaly is is a

646fc975-dd82-478b-ba05-6fbbbd2f3bb-4  
01:03:16.478 --> 01:03:21.320  
fatal birth defect. Umm, so you  
know infants that are affected

646fc975-dd82-478b-ba05-6fbbbd2f3bb-5  
01:03:21.320 --> 01:03:25.855  
within encephalitis do not do  
not survive because they are

646fc975-dd82-478b-ba05-6fbdbdc2f3bb-6  
01:03:25.855 --> 01:03:26.470  
missing.

e45545e1-7bfd-4f0e-9747-11015ac46103-0  
01:03:28.520 --> 01:03:32.367  
Portions of their portions, or  
of their their brain and their

e45545e1-7bfd-4f0e-9747-11015ac46103-1  
01:03:32.367 --> 01:03:32.740  
skull.

fd125571-cee3-4066-9409-07f31e7bedea-0  
01:03:33.570 --> 01:03:36.630  
Great. Thanks for that  
clarification. I can I add

fd125571-cee3-4066-9409-07f31e7bedea-1  
01:03:36.630 --> 01:03:40.303  
something on to that, please.  
Doctor Clark, you know, and I

fd125571-cee3-4066-9409-07f31e7bedea-2  
01:03:40.303 --> 01:03:44.098  
and I appreciate this question  
because I've had this question

fd125571-cee3-4066-9409-07f31e7bedea-3  
01:03:44.098 --> 01:03:47.587  
asked to me before. As someone  
who diagnoses neural tube

fd125571-cee3-4066-9409-07f31e7bedea-4  
01:03:47.587 --> 01:03:51.627  
defects of all variations in all  
severities, we unfortunately you

fd125571-cee3-4066-9409-07f31e7bedea-5  
01:03:51.627 --> 01:03:55.361  
can't gear the messaging to you  
know only if it's preventing

fd125571-cee3-4066-9409-07f31e7bedea-6  
01:03:55.361 --> 01:03:59.340  
anencephaly, we use neural tube  
defects as a broad category. But

fd125571-cee3-4066-9409-07f31e7bedea-7  
01:03:59.340 --> 01:04:02.829  
I my patient population is  
largely indigent, underserved

fd125571-cee3-4066-9409-07f31e7bedea-8  
01:04:02.829 --> 01:04:03.379  
they are.

87041b92-ec6b-4e90-a374-29289872c3ee-0  
01:04:03.530 --> 01:04:06.322  
Have food deserts in their  
areas. They don't have this

87041b92-ec6b-4e90-a374-29289872c3ee-1  
01:04:06.322 --> 01:04:09.063  
supplementation or don't have  
the knowledge about the

87041b92-ec6b-4e90-a374-29289872c3ee-2  
01:04:09.063 --> 01:04:12.210  
supplementation, and I see some  
really severe cases of neural

87041b92-ec6b-4e90-a374-29289872c3ee-3  
01:04:12.210 --> 01:04:15.358  
tube defects, more anencephaly  
cases, and so as the messaging

87041b92-ec6b-4e90-a374-29289872c3ee-4  
01:04:15.358 --> 01:04:18.708  
goes, we're really trying. We're  
not saying that having that is a

87041b92-ec6b-4e90-a374-29289872c3ee-5  
01:04:18.708 --> 01:04:21.957  
bad thing, but we're saying is  
we need to get the messaging out

87041b92-ec6b-4e90-a374-29289872c3ee-6  
01:04:21.957 --> 01:04:24.902  
there to prevent some of the  
really bad cases that people

87041b92-ec6b-4e90-a374-29289872c3ee-7  
01:04:24.902 --> 01:04:27.643  
really don't want to talk about.  
And I diagnose those

87041b92-ec6b-4e90-a374-29289872c3ee-8  
01:04:27.643 --> 01:04:30.790  
unfortunately pretty routinely.  
So in the best case scenario,

87041b92-ec6b-4e90-a374-29289872c3ee-9  
01:04:30.790 --> 01:04:33.380  
you know, things can be done,  
you know, in Europe.

8c3deede-581b-45f2-a07f-b7cc37a7fda0-0  
01:04:33.550 --> 01:04:36.501  
Surgery, which is great. You  
know, things that we can do to

8c3deede-581b-45f2-a07f-b7cc37a7fda0-1

01:04:36.501 --> 01:04:39.551  
improve the quality of life. I  
have a best friend whose child

8c3deede-581b-45f2-a07f-b7cc37a7fda0-2  
01:04:39.551 --> 01:04:42.454  
has an under old tube defect,  
but it's there's other forms

8c3deede-581b-45f2-a07f-b7cc37a7fda0-3  
01:04:42.454 --> 01:04:45.308  
that unfortunately do not lead  
to a viable pregnancy or a

8c3deede-581b-45f2-a07f-b7cc37a7fda0-4  
01:04:45.308 --> 01:04:48.309  
viable, you know, a live birth  
even. And so we still need to

8c3deede-581b-45f2-a07f-b7cc37a7fda0-5  
01:04:48.309 --> 01:04:50.916  
encourage folic acid  
supplementation for those cases

8c3deede-581b-45f2-a07f-b7cc37a7fda0-6  
01:04:50.916 --> 01:04:51.310  
as well.

68f9b636-707f-4e3f-86a7-81f0d6b2a2a5-0  
01:04:52.460 --> 01:04:56.926  
Thanks so much, Doctor Clark.  
Unfortunately, that is all the

68f9b636-707f-4e3f-86a7-81f0d6b2a2a5-1  
01:04:56.926 --> 01:05:01.392  
time we have for questions and  
answers and there are several

68f9b636-707f-4e3f-86a7-81f0d6b2a2a5-2  
01:05:01.392 --> 01:05:05.932  
great questions that that are  
out there that that we can that

68f9b636-707f-4e3f-86a7-81f0d6b2a2a5-3  
01:05:05.932 --> 01:05:10.618  
we will make sure we update and  
include in our materials in the

68f9b636-707f-4e3f-86a7-81f0d6b2a2a5-4  
01:05:10.618 --> 01:05:14.060  
future. Next slide continuing  
education or CE.

2d2b5a08-d993-4198-9e4a-aabc8d2f6c12-0  
01:05:14.730 --> 01:05:20.689  
For those wishing to receive  
continuing education for this

2d2b5a08-d993-4198-9e4a-aabc8d2f6c12-1  
01:05:20.689 --> 01:05:26.850  
webinar, WC4615, folic acid, the  
best tool to prevent NTD's,

2d2b5a08-d993-4198-9e4a-aabc8d2f6c12-2  
01:05:26.850 --> 01:05:33.415  
please visit [www.cdc.gov/get](http://www.cdc.gov/get) CE  
and follow the nine simple steps

2d2b5a08-d993-4198-9e4a-aabc8d2f6c12-3  
01:05:33.415 --> 01:05:39.778  
to earn CE by October 17th. The  
access code for this course is

2d2b5a08-d993-4198-9e4a-aabc8d2f6c12-4  
01:05:39.778 --> 01:05:46.040  
folic acid 2022 with no spaces  
for dietitians and registered.

1229e31a-c6be-432b-89d7-e1e66444e600-0  
01:05:46.360 --> 01:05:52.625  
Dietetic technicians who wish to  
earn CPE please complete the

1229e31a-c6be-432b-89d7-e1e66444e600-1  
01:05:52.625 --> 01:06:01.720  
evaluation at the website  
[bit.ly/forwardslashfolicacidcpecontactbenjamin.hartley@azdhs.gov](http://bit.ly/forwardslashfolicacidcpecontactbenjamin.hartley@azdhs.gov)

1229e31a-c6be-432b-89d7-e1e66444e600-2  
01:06:01.720 --> 01:06:07.278  
for questions about earning CPE  
credit approved by the

1229e31a-c6be-432b-89d7-e1e66444e600-3  
01:06:07.278 --> 01:06:12.533  
Commission on Dietetic  
Registration. e-mail address

1229e31a-c6be-432b-89d7-e1e66444e600-4  
01:06:12.533 --> 01:06:16.070  
spelled BENG AM IN dot  
HARTLEYAZD.

89bb4c80-9fce-4b82-84ec-4a8b3f860e2b-0  
01:06:16.170 --> 01:06:17.570  
HHS Gov.

0b1ae6ab-8796-4cb6-94a8-c5a24a89b50a-0  
01:06:18.490 --> 01:06:21.862  
I want to thank you all so much  
for your participation in

0b1ae6ab-8796-4cb6-94a8-c5a24a89b50a-1  
01:06:21.862 --> 01:06:25.351

today's webinar. I'd also like  
to thank our presenters once

0b1ae6ab-8796-4cb6-94a8-c5a24a89b50a-2  
01:06:25.351 --> 01:06:28.490  
again for those incredibly  
informative talks and this

0b1ae6ab-8796-4cb6-94a8-c5a24a89b50a-3  
01:06:28.490 --> 01:06:29.770  
concludes our webinar.

f97713b8-1b7b-40e9-a09a-499309ba1c14-0  
01:06:30.780 --> 01:06:32.490  
Thank you. Thank you.

955e05e6-9dca-4e61-b490-327eae750a44-0  
01:06:34.910 --> 01:06:39.110  
Next slide. Thank you. Folic  
Acid Awareness Week 2022,

955e05e6-9dca-4e61-b490-327eae750a44-1  
01:06:39.110 --> 01:06:43.768  
celebrating 30 years of folic  
acid's power to prevent neural

955e05e6-9dca-4e61-b490-327eae750a44-2  
01:06:43.768 --> 01:06:48.579  
tube defects in babies. Learn  
more at [www.cdc.gov/andCBD/folic](http://www.cdc.gov/andCBD/folic)

955e05e6-9dca-4e61-b490-327eae750a44-3  
01:06:48.579 --> 01:06:53.161  
acid For more information,  
contact CDC one 800 CDC info the

955e05e6-9dca-4e61-b490-327eae750a44-4  
01:06:53.161 --> 01:06:58.125  
findings and conclusions in this  
report are those of the authors

955e05e6-9dca-4e61-b490-327eae750a44-5  
01:06:58.125 --> 01:07:02.859  
and do not necessarily represent  
the official position of the

955e05e6-9dca-4e61-b490-327eae750a44-6  
01:07:02.859 --> 01:07:06.220  
Centers for Disease Control and  
Prevention.

ee0f6487-d3bf-4223-9fa7-1c96f5010f79-0  
01:07:06.480 --> 01:07:08.400  
Put third zero at very end now.