USING LABORATORY FOLATE STATUS ASSESSMENT TO STRENGTHEN NTD PREVENTION

*INTERACTIVE **WEBINAR***

Join us on March 4th at 9 a.m. EST to learn about a regional laboratory training approach to improve folate status assessment to advance neural tube defect (NTD) prevention

MARCH 4th 2019 | ***CLICK HERE TO REGISTER***
http://bit.ly/FolateTaskTeamWebinarMar4

09:00AM – 10:30AM EST

NUTRITION INTERNATIONAL
Nourish Life

The Folate Task Team

Homero Martinez
MD, PhD
Senior Technical Advisor
Nutrition International

Jessica Poulin
MSc
Knowledge Translation Officer
Nutrition International

Aliki Pappas Weakland
MPH, MSW
Project Consultant
Core Engagement

List of Speakers

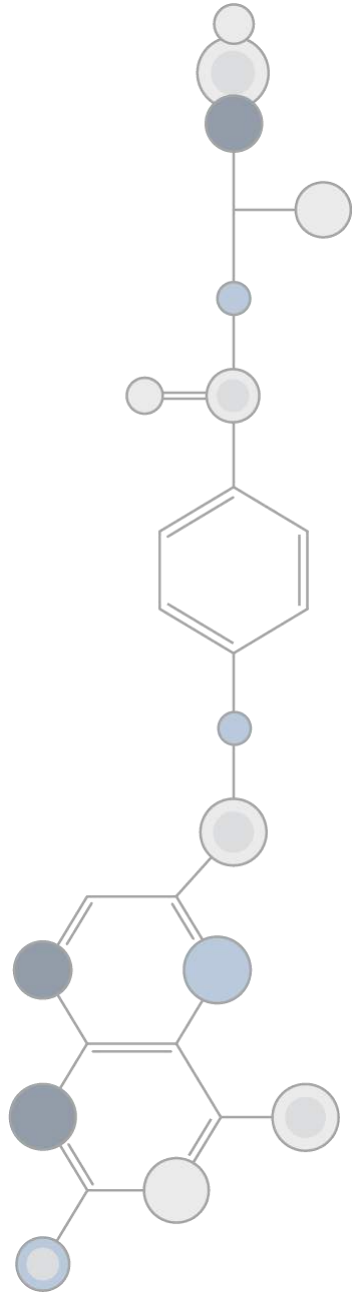
Homero Martinez ***MD, PhD***
Senior Technical Advisor Nutrition International

Christine Pfeiffer ***BS, MS, PhD***
Chief, Nutritional Biomarkers Branch, Division of Laboratory Sciences, CDC National Center for Environmental Health

Renuka Jayatissa ***MBBS, MSc, MD***
Department Head, Nutrition Medical Research Institute, Sri Lanka

Kehkashan Begum ***MSc, Manager, Nutrition Research Laboratory, Karachi, Pakistan***

FOLATE TASK TEAM



Dr. Homero Martinez

MD, PhD

Senior Technical Advisor
Nutrition International

FOLATE TASK TEAM

SUPPORTING A GLOBAL STRATEGY FOR THE CONTROL OF FOLATE DEFICIENCY AND FOLIC ACID RESPONSIVE NEURAL TUBE DEFECTS (ANENCEPHALY AND SPINA BIFIDA)

A grant by the

Bill & Melinda Gates Foundation

to Nutrition International

Background

- In 2016/2017, the Micronutrient Forum convened at NI a technical consultation on Folate Status in Women and NTD prevention.
- Main objectives of the consultation were:
  - ✓ To develop a roadmap for low- and middle-income countries to better inform and prioritize investments in NTD risk-reduction
  - ✓ To help guide implementation efforts in terms of feasibility of interventions and the potential for acceleration
  - ✓ To identify the knowledge gaps that remain including addressing any questions on safety and efficacy of folic acid interventions

Two original contributions relevant for this work

- ✓ Rogers L, A.M. Cordero, C.M. Pfeiffer, D.G. Hausman, B.L. Tsang, L.M. De-Regil, et al. **Global folate status in women of reproductive age: a systematic review with emphasis on methodological issues**. Ann NY Acad Sci. 2018;1431(1):35-57.

- ✓ Pfeiffer CM, M. Zhang, S. Jabbar. **Framework for laboratory harmonization of folate measurements in low- and middle-income countries and regions**. Ann NY Acad Sci. 2018: 1414(1);96-108.

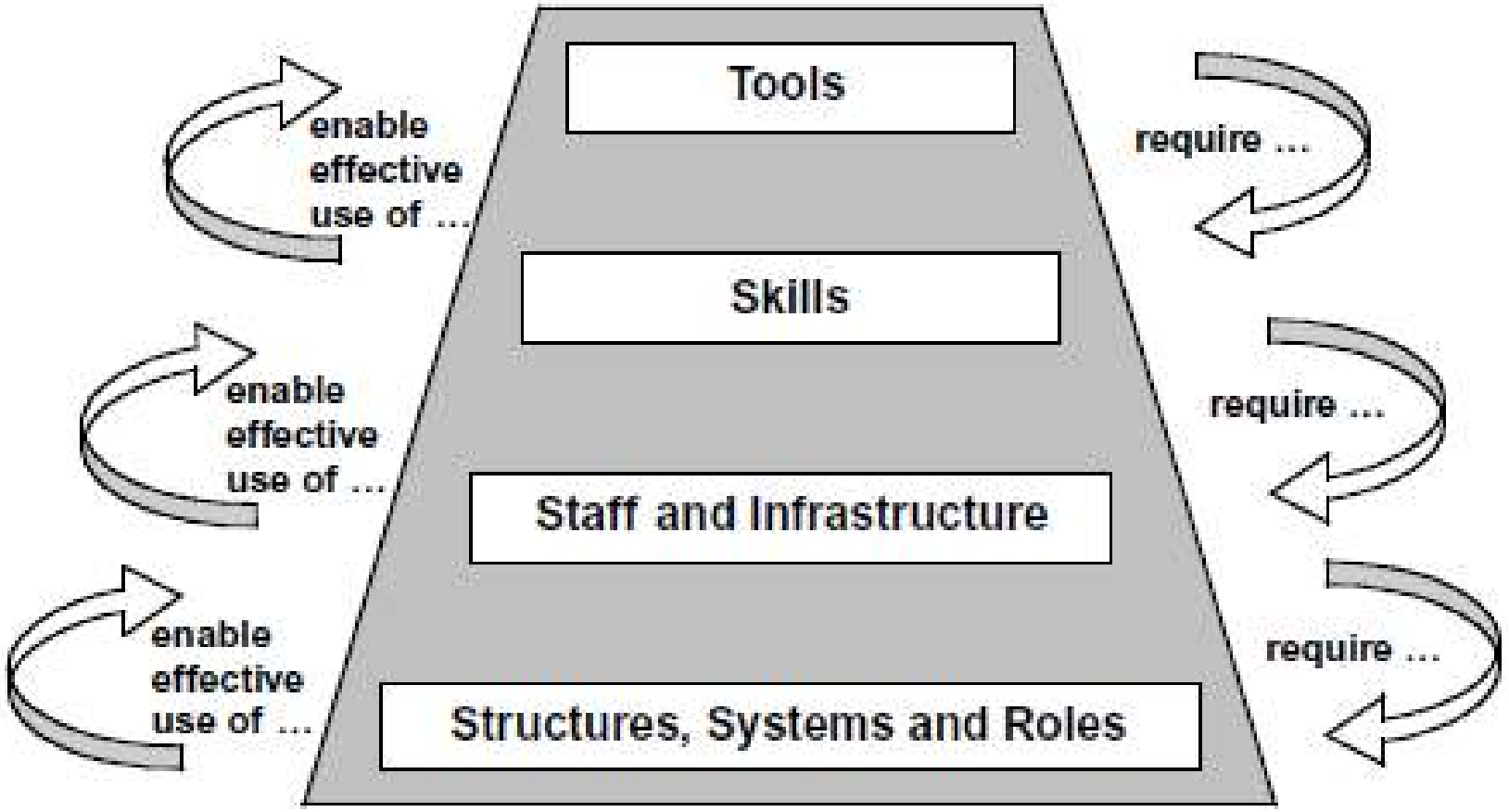
Main challenges to address

- ✓ Improving the folate status of women of reproductive age (WRA) before they are pregnant can help prevent the majority of folate-responsive NTDs
- ✓ However, several challenges remain, including:
  - Limited information on folate status in WRA, using a harmonized microbiological assay to measure red blood cell folate
  - Limited use and availability of laboratories properly trained in the recommended method to assess folate status

To address and overcome these challenges, Nutrition International proposed to:

- Build capacity in selected LMIC to assess folate status, with a view to establish a future global network of regional laboratories
  - In collaboration with CDC-DLS, the project seeks to:
    - ✓ Identify 5 regional labs to send 2 trainees each to CDC-DLS
    - ✓ Provide these labs with equipment/reagents to conduct MBA to determine RBC folate
    - ✓ Produce a training video to shorten training time and provide long-lasting support
    - ✓ Set the basis for a future global network of regional lab

A systemic capacity building approach



Christopher Potter and Richard Brough. Health Pol Plann 2004;19(5):336-345

Dr. Christine Pfeiffer

BS, MS, PhD

Chief, Nutritional Biomarkers Branch
Division of Laboratory Sciences
CDC National Center for Environmental Health

FOLATE TASK TEAM

Using Laboratory Folate Status Assessment to Strengthen Neural Tube Defect Prevention:

A Regional Training Approach

Christine M Pfeiffer, PhD

Chief, Nutritional Biomarkers Branch

Disclosure

Funding for this project has been provided by the Bill & Melinda Gates Foundation and Nutrition International, Canada to the CDC Foundation

Outline

- Why the folate microbiologic assay?
- Why a regional approach?
- Components of successful capacity building
- Project goal and objectives
- Training approach
- Laboratory engagement
- Progress
- Way forward

Good folate status is needed during periods of growth and development

Folate lab measurements face multiple analytical challenges

Compound related

- Several folate derivatives
- Susceptibility to oxidation, decomposition, and interconversions
- Folate derivatives have different affinities to folate binding protein
- Low serum folate levels in serum and blood
- Deconjugation of folate polyglutamates in RBCs

Sample collection related

- Need well-controlled collection, processing, and storage conditions
- Need to accurately generate whole blood hemolysate for RBC folate

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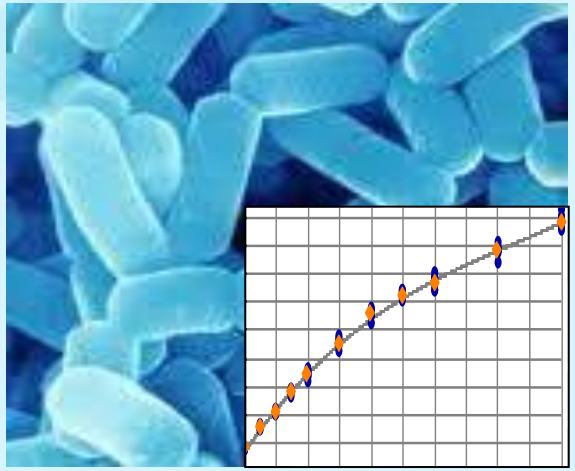


Three major types of folate analytical methods

Microbiologic assay (MBA)

Inexpensive & valid

- Simple & inexpensive
- Requires low specimen volume (<50 µL)
- Acceptable accuracy & precision
- In-house control of performance
- Lengthy manual assay
- Inhibited by antibiotics or anti-folates

Protein-binding assay (PBA)

Easy but not comparable

- Commercially available
- Fully automated & high throughput
- Good precision, but questionable accuracy
- No in-house control
- Lot-to-lot variability

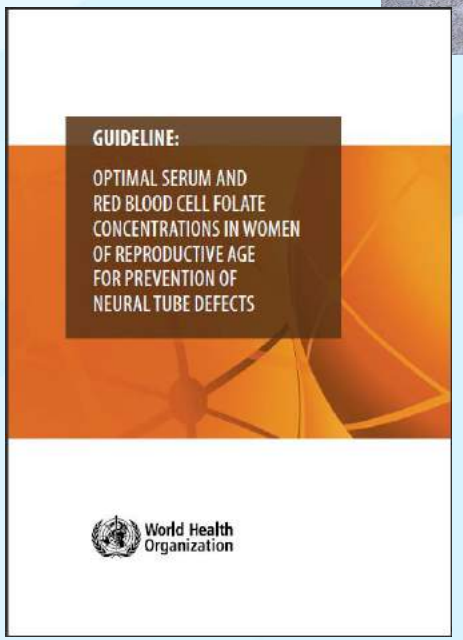
Chromatography assay (e.g., LC-MS/MS)

Expensive & complex

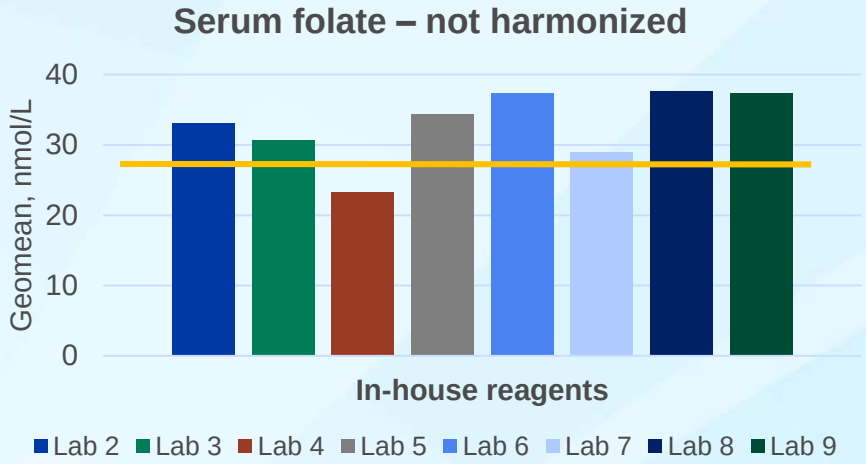
- Can achieve highest accuracy & precision
- In-house control of performance
- Expensive & technically complex

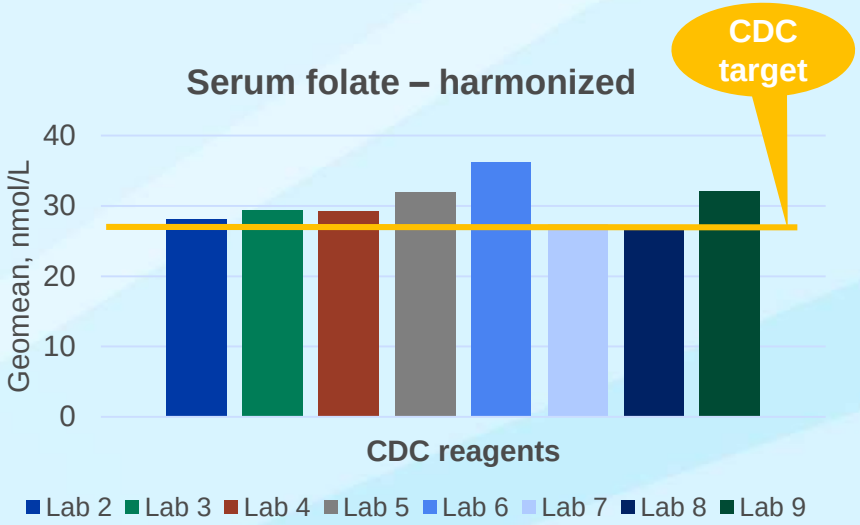
MBA – practical choice for low-resource labs

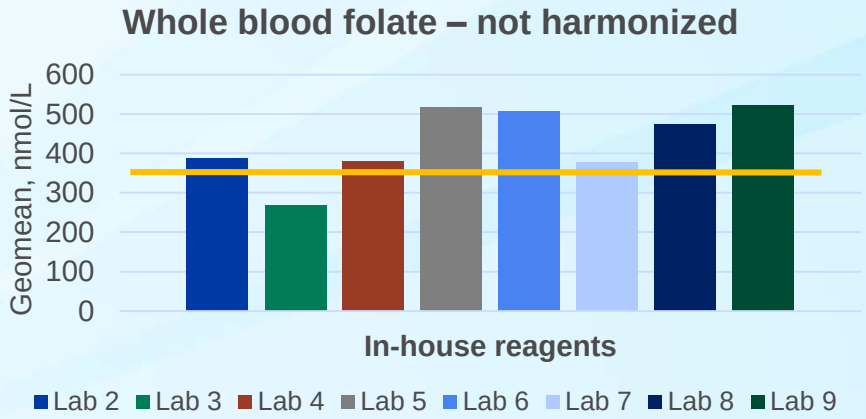
- Assay used to derive cutoff values for folate deficiency (megaloblastic anemia) and insufficiency (risk of neural tube defects, NTDs)
- Assay recommended by WHO for population surveys

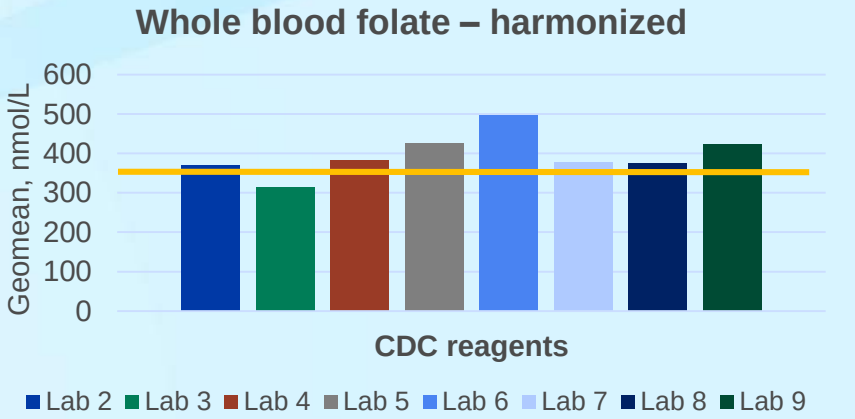


Lab-to-lab variability improved with use of common critical reagents (microorganism and calibrator)









Zhang et al., J Nutr 2018

23 serum and WB samples from US blood bank donors analyzed in replication (n=2)

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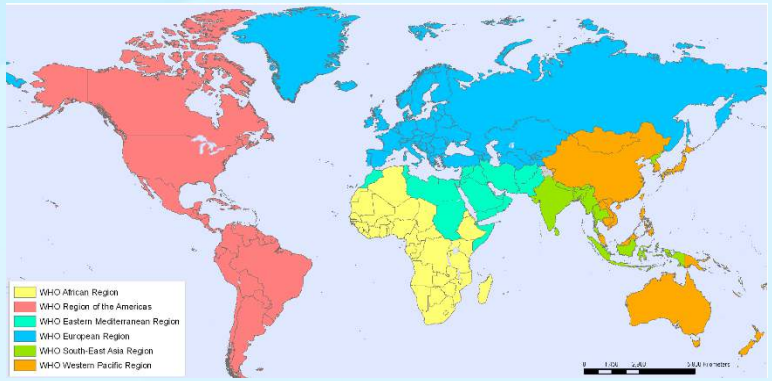

Each country has a limited need for blood folate measurements at the population level

- Periodic nature of surveys (baseline, follow-up to assess impact, periodic monitoring)
- Routine lab can handle ~10,000 samples/year
- Interruptions of routine analysis may lead to problems when assay is restarted

- Efficient approach - **Network of regional resource laboratories**:
  - Proficient at conducting the MBA
  - Willing to perform fee-for-service work for other countries
  - Produce reliable folate data that can be compared across labs and over time

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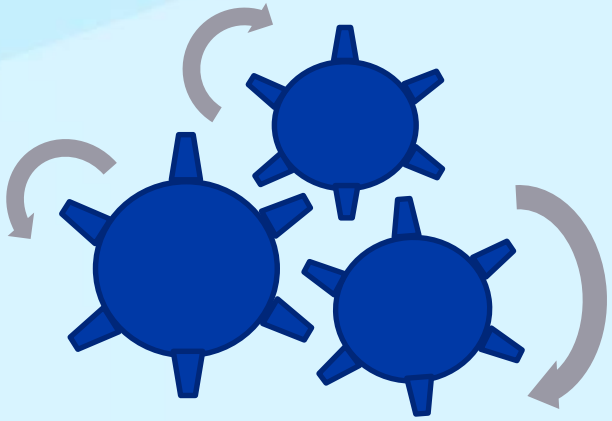
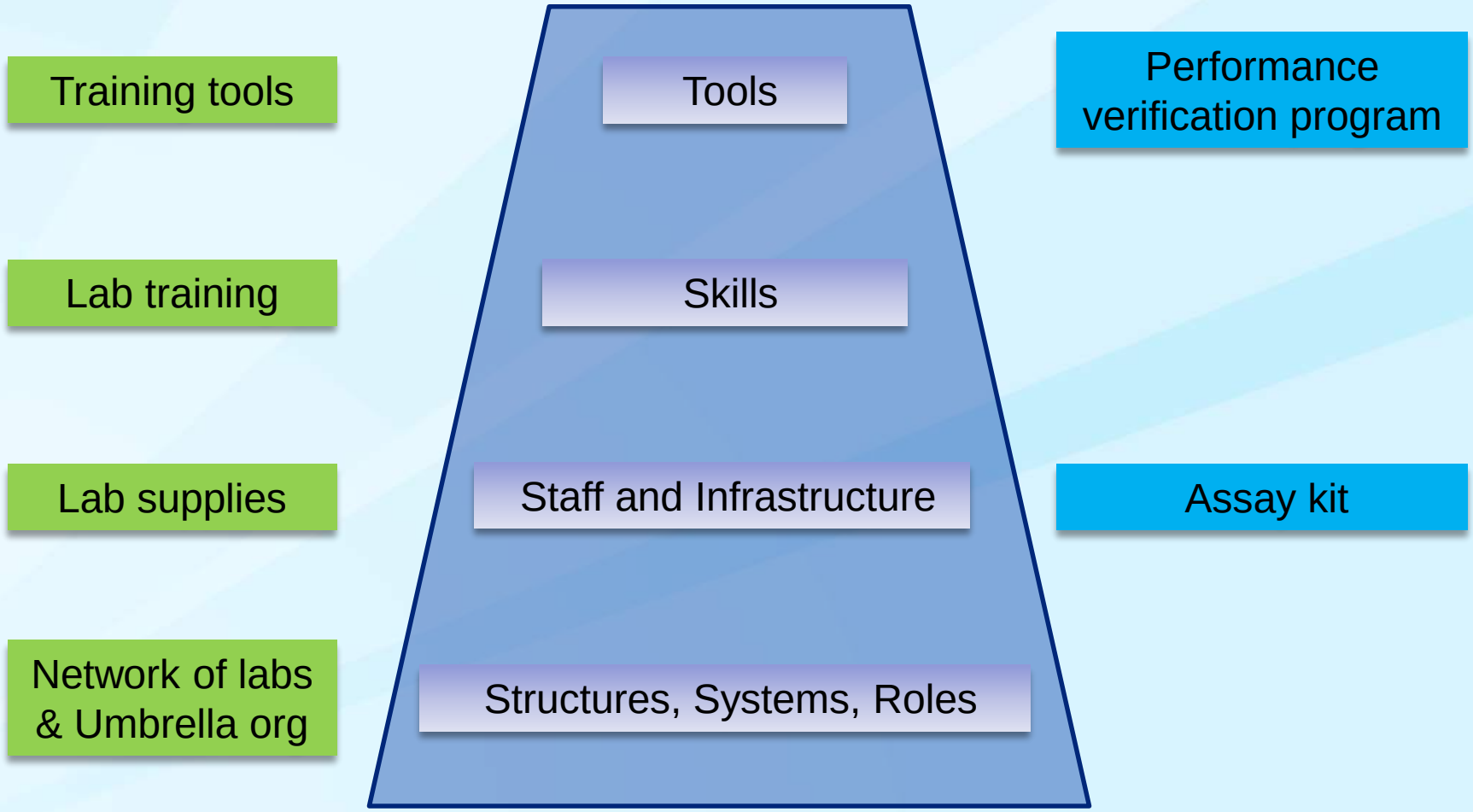


Building and sustaining lab capacity entails more than just training



Capacity pyramid by Potter & Brough, 2004

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Facilitate the development of regional resource labs to assess folate insufficiency and monitor prevention strategies globally

- Train 6-12 laboratories worldwide (across WHO regions)
- Provide critical supplies to new resource laboratories
- Develop a training video for the folate MBA
- Develop comprehensive tool package (training manual, posters, SOPs)
- Provide start-up and/or survey assay kit containing critical reagents
- Set up performance verification program for testing laboratories
- Initiate steps to develop a network of resource laboratories
- Identify an umbrella organization to host the network

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CDC Training – 2018 Dec
Sri Lanka & Tanzania

Training planning and execution – expect the unexpected

Logistical planning

- Identify trainees
- Invitation letters
- Trainee visa/passport
- CDC Guest Researcher approval
- CDC Security Clearance
- Travel arrangements

Technical preparation

- Identify & fulfill supply needs
- Produce training video
- Generate training manual
- Develop training posters
- Assemble other training tools
- Prepare host lab for training

Training execution

- Lab safety orientation
- Demonstrate/observe procedure
- Allow for repeat experiments
- Review instrument operation & maintenance
- Teach proper data review
- Discuss QC rules & QA program
- Provide start-up kit & some supplies

Post-training follow-up

- Assist remotely with questions & troubleshooting
- Review & interpret trainee lab data
- Provide guidance on assay improvement
- Determine lab proficiency

Traditional 2-week training format

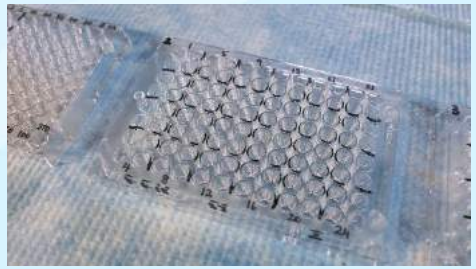
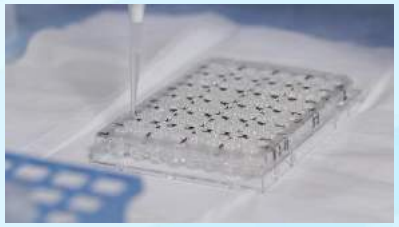
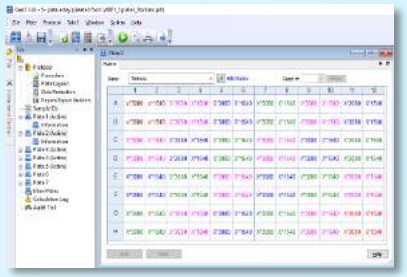
Mon	Tue	Wed	Thu	Fri			Mon	Tue	Wed	Thu	Fri
	Run 1										
		Run 2									
							Run 3				
								Run 4			
									Run 5		

New 5-day training format – video-assisted

Mon	Tue	Wed	Thu	Fri
Run 1				
	Run 2			
		Run 3		

Review folate MBA training video and other materials ahead of time

Training components – Folate MBA step-by-step

Prepare reagents 	**Dilute samples** 	**Prepare 96-well plates** 
Dilute calibrator & add to 96-well plate 	**Add samples to 96-well plates** 	**Seal & incubate plates** 
Read plates 	**Review results** 	**Clean up & disposal** 

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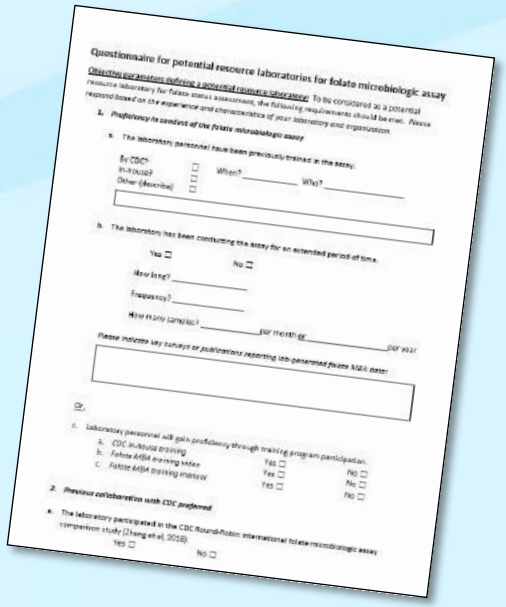


Questionnaire for potential resource laboratories for folate microbiologic assay

Objective parameters defining a potential resource laboratory: To be considered as a potential resource laboratory for folate status assessment, the following requirements should be met. Please respond based on the experience and characteristics of your laboratory and organization.

1. *Proficiency in conduct of the folate microbiologic assay*

a. The laboratory personnel have been previously trained in the assay:

By CDC? ☐ When? _____ Why? _____
In-House? ☐
Other (describe) ☐

b. The laboratory has been conducting the assay for an extended period of time.

Yes ☐ No ☐

How long? _____

Frequency? _____

How many samples? _____ per month or _____ per year

Please indicate key surveys or publications reporting lab-generated folate MBA data:

Or,

c. Laboratory personnel will gain proficiency through training program participation:

a. CDC in-house training Yes ☐ No ☐
b. Folate MBA training video Yes ☐ No ☐
c. Folate MBA training manual Yes ☐ No ☐

2. *Previous collaboration with CDC preferred*

a. The laboratory participated in the CDC Round-Robin international folate microbiologic assay comparison study (Zhang et al, 2018).

Yes ☐ No ☐

Selection criteria for trainee labs to ensure successful technology transfer

INSTITUTION

Requirements to ensure successful assay implementation in country laboratories

- Laboratory conducts public health related work
- Supportive management
  - Provide laboratory space
  - Continuity in personnel
- Equipment & supplies available or readily procurable
- Quality assurance program in place

TRAINEE

Requirements to ensure efficient training

- Proficiency written & spoken English
- Bachelor of Science degree
  - Advanced degree (MS or PhD) desirable
  - Research experience highly desirable
- Experience with biological specimens and pipettes
- Ability to work with MS Office
- Good interpersonal & organizational skills

Needs assessment of trainee labs

Developed detailed folate MBA supply checklist:

- Essential chemicals, supplies and equipment – 37 item list @ $23K US
- “Helpful” chemicals, supplies and equipment – 12 item list @ $16K US

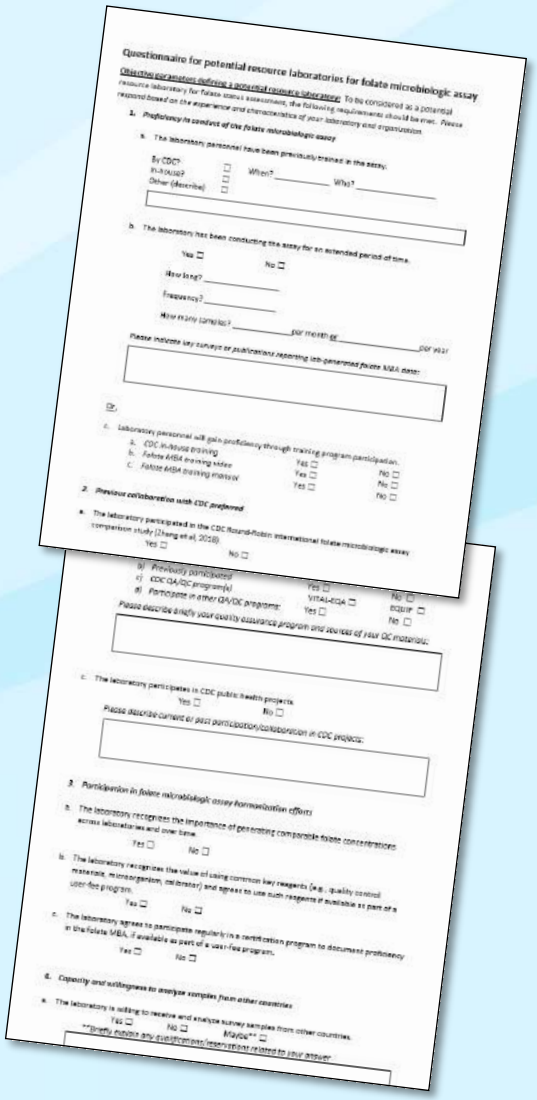
Folate Microbiologic Assay -- Essential (tier I) chemicals, supplies, and equipment

Chemicals	Unit price	Units needed	Total price	Comment
Folic acid casei medium (Himedia M543, 100 g). No alternative available as of 2018.	$130	3	$390	One bottle sufficient for 9 runs with 5-6 plates/run (~700 samples) or 12 runs with 2-4 plates/run; **purchase 3 bottles to set up assay and have some extra for a small study**
L-Sodium ascorbate, 99% purity (Ex: Fisher Item # AC352685000, 500 g). Alternate brand can be used.	$113	1	$113	One bottle lasts for several years; need only 2.5 g/run
Tween-80 (Ex: Fisher Item # T054625G, 25 g). Brand can be substituted.	$16	1	$16	One bottle lasts for several years; need only 60 µL for 200 mL medium
Ethyl alcohol, 100%, USP (Ex: Fisher Item# 07-678-005, 500 mL). Alternate brand can be used.	$43	1	$43	Used to clean pipettes
Bleach or alternate disinfectant				Added to leftover medium to deactivate non-pathogenic bacteria
Disinfectant hand soap - can be purchased from household store				Used to wash hands after lab work
SUM	$302		$562	

Capacity assessment of potential network labs

Developed 7-part Lab Readiness Questionnaire to provide objective parameters for decision-making

1. Proficiency in conduct of folate MBA
2. Previous collaboration with CDC preferred
3. Participation in folate MBA harmonization efforts
4. Capacity and willingness to analyze samples from other countries
5. Skilled technical staff and stable workforce
6. Appropriate laboratory resources and infrastructure
7. Supportive organization and management



<u>Round one – fall 2018</u>:

- Contacted 18 labs from 17 countries
- 15 potential; 1 logistical issues; 2 no response

<u>Round two – early 2019</u>: Ongoing inquiry

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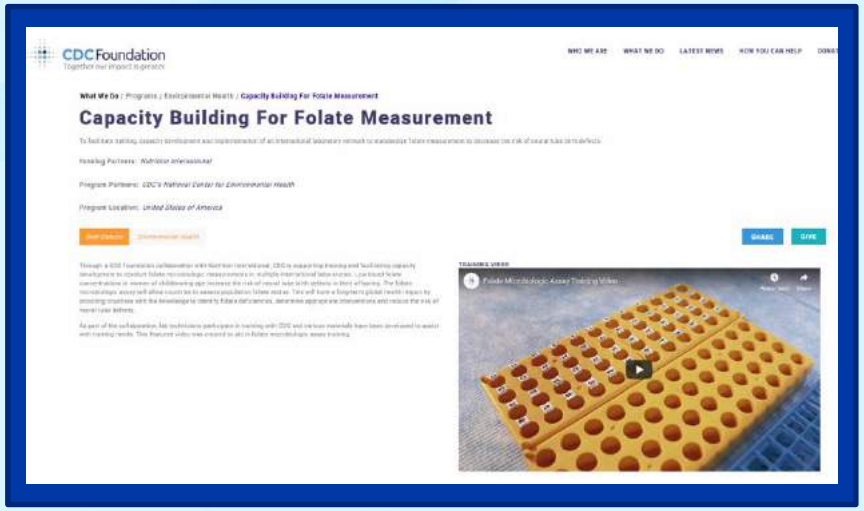
CDC Training – 2018 Dec
Sri Lanka & Tanzania

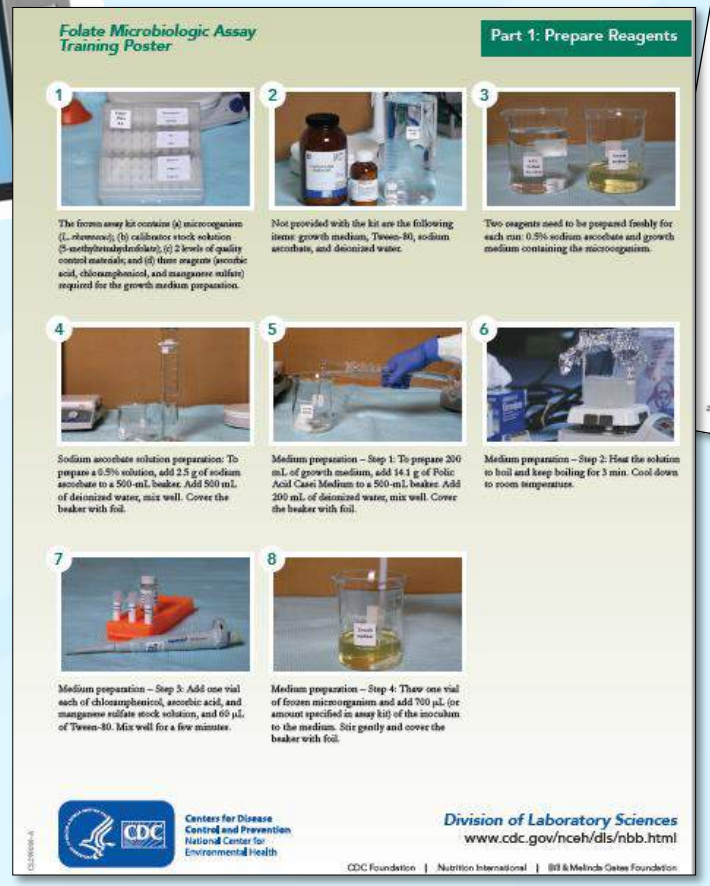
Training video development took nearly 4 months

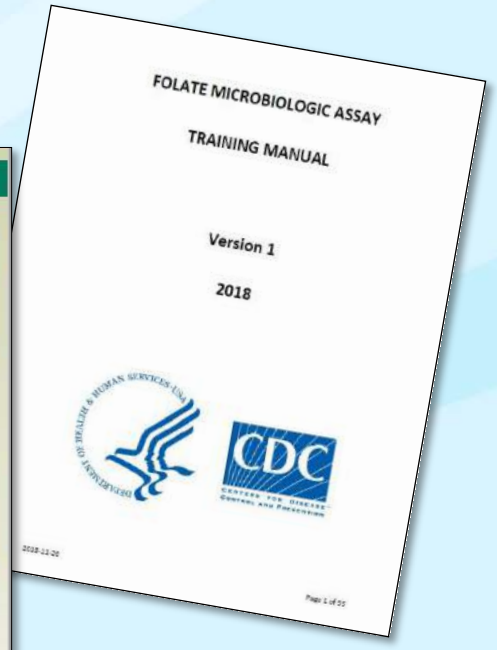
- Select video production company
- Pre-production (~6 weeks)
  - Script preparation and visualization
  - Voice-over recording
  - Scout and prep shooting location
- Production (1 day)
  - Ten hour in-lab shoot
- Post-production (~8 weeks)
  - Editing, review and revision
  - Graphics addition
- Web hosting – CDC Foundation



Folate Microbiologic Assay Training Video

Training aids increase the efficiency & effectiveness of the folate MBA training





Recently trained 5 countries from 4 WHO regions

WHO Region	Country trained	Year of training
Western Pacific	Philippines	2019 January
Western Pacific	Viet Nam	2019 January
Eastern Mediterranean	Pakistan	2019 January
South-East Asia	Sri Lanka	2018 December
Africa	Tanzania	2018 December
Americas	Chile	2017 May
South-East Asia	India (2 labs)	2016 September
Africa	Ethiopia	2015 August
Western Pacific	China	2013 August
Eastern Mediterranean	Iraq*	2010 November
Americas	USA**	2010 April
Eastern Mediterranean	Jordan	2009 August
Americas	Venezuela**	2008 May
Europe	Uzbekistan**	2007 April

* Lab not available due to logistical issues

** Lab no longer available

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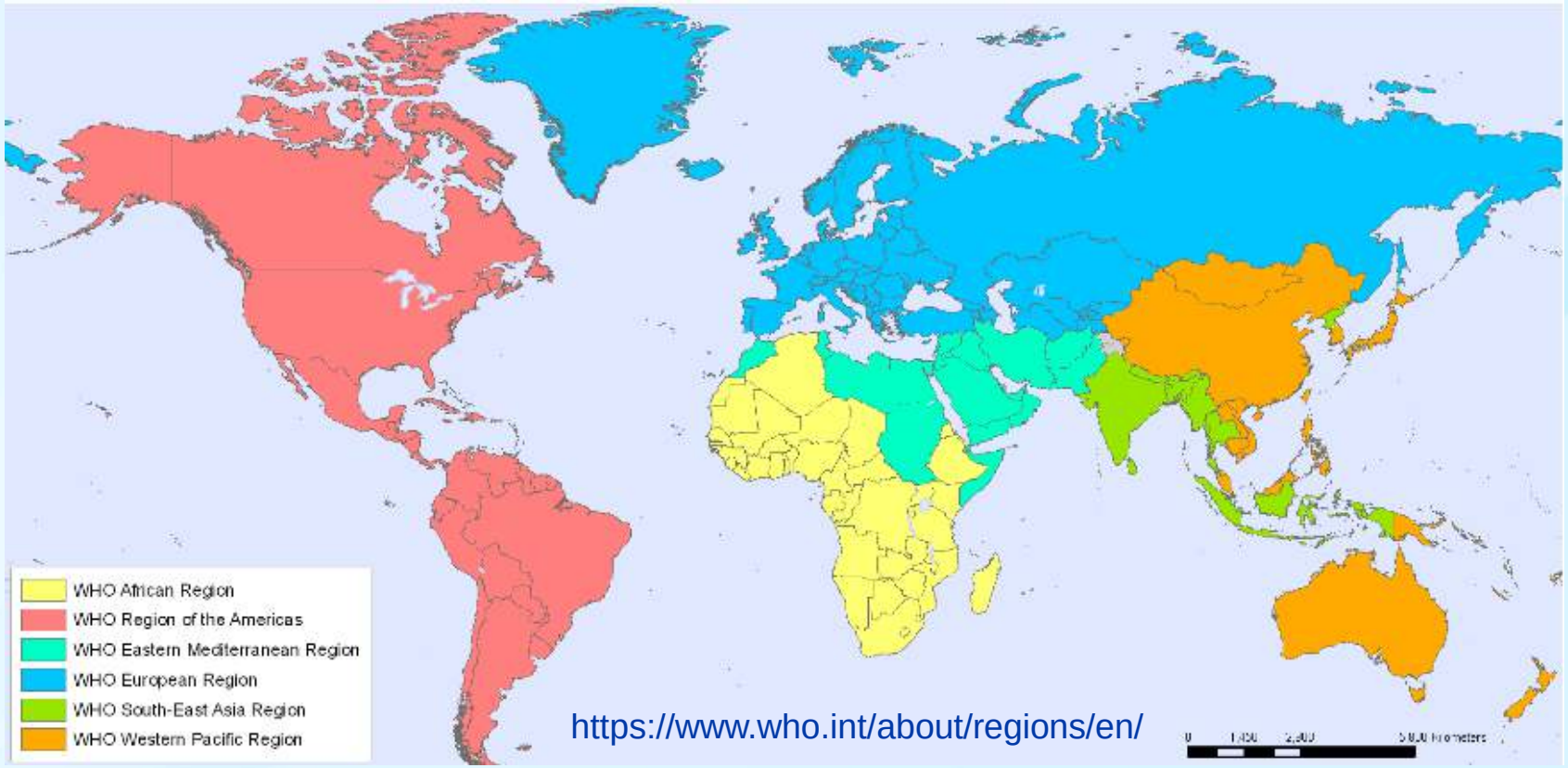
CDC Training – 2019 Jan
Pakistan, Philippines & Viet Nam

Put skills into practice

Once newly trained lab technicians can demonstrate proficiency, they need to put their skills into practice to maintain proficiency.

That means, analyzing samples, and more samples…

Build global network of ~12 resource laboratories proficient in the folate MBA across 6 WHO regions



Selection of resource laboratories based on assay performance and capacity

New proposed project components to enhance and expand the reach and impact of this project

- Collaborate with the future umbrella organization that will host the network to guide resource labs to self-sustainability
- Train additional laboratories in order to achieve required balance and representation in each WHO region
- Explore the potential to expand the scope of the resource laboratories to other micronutrients

CDC Training – 2019 Jan
Pakistan, Philippines & Viet Nam

CDC Training – 2018 Dec
Sri Lanka & Tanzania

Acknowledgments

CDC Global Micronutrient Team at Nutritional Biomarkers Branch
CDC Foundation
Collaborators at Nutrition International, Folate Task Team
Colleagues at CDC Birth Defects and Chronic Centers

Questions?

For more information please contact Centers for Disease Control and Prevention

1600 Clifton Road NE, Atlanta, GA 30333
Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
Visit: www.cdc.gov | Contact CDC at: 1-800-CDC-INFO or www.cdc.gov/info

Dr. Renuka Jayatissa

MBBS, MSc, MD

Department Head
Nutrition Medical Research Institute, Sri Lanka

FOLATE TASK TEAM

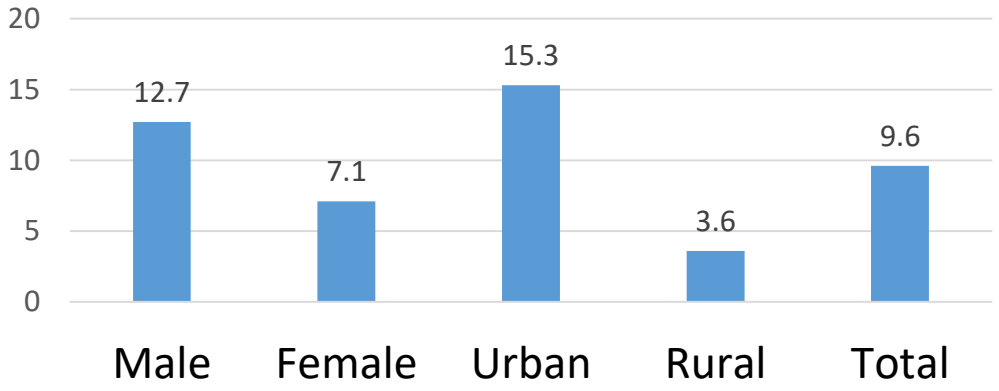
Using Laboratory Folate Status Assessment to Strengthen NTD Prevention – Sri Lankan Experience

Dr. Renuka Jayatissa
Head, Department of Nutrition
Medical Research Institute
Ministry of Health
Sri Lanka

Why Sri Lanka need to assess folate status?

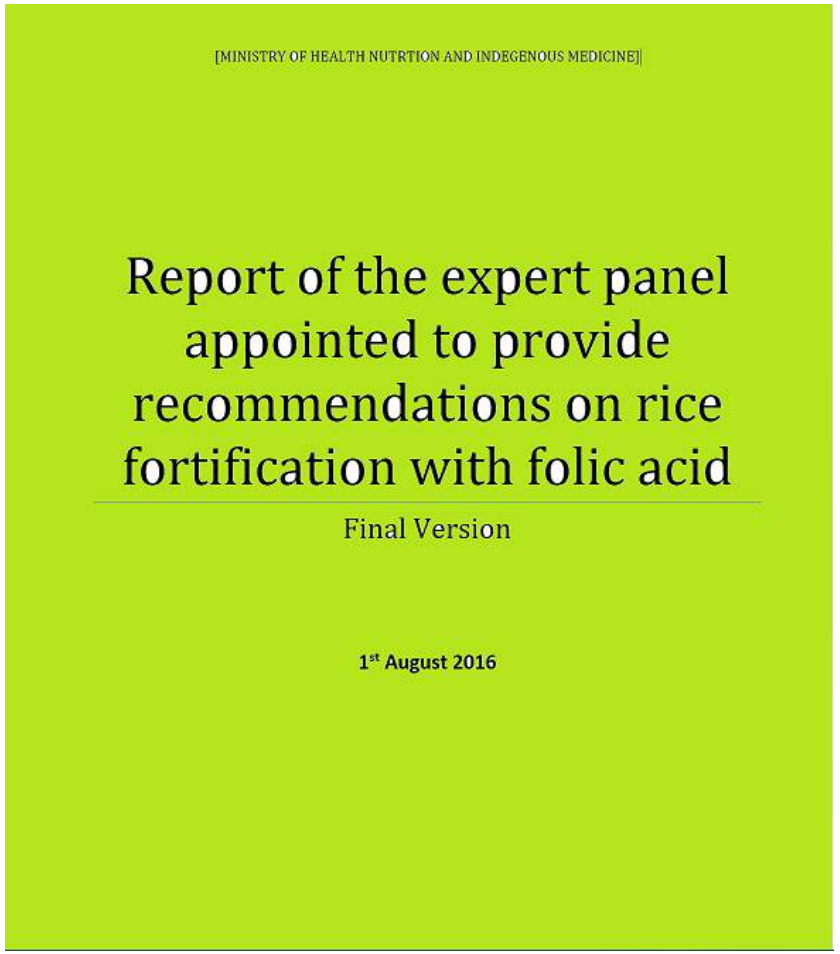
- Prevalence of folate deficiency in adults – 9.6%.
- Incidence of NTD - 1.2/1000 live births; 4000 per year (FHB 2015, Birth defects surveillance).
- Pre natal folic acid supplementation coverage - 48% with varied duration of the supplementation (MRI 2015).
- Iron deficiency anaemia of pregnant women - 10% due to many supplementation programmes.
- But the rate of anaemia is 30% over last 20 years (MRI 2015).
- Need folic acid contribution to explore etiology.

Figure 1: Prevalence of folic acid deficiency (<3ng/ml) in Sri Lankan adult 30-60 years (Source: MRI 2012)



National recommendation on folic acid

- A national level study on folate deficiency and insufficiency among the general population and women of reproductive ages
- Need baseline folate data for future evaluation of folate interventions.
- Challenge was our laboratory was not equipped and trained.



CDC Training opportunity for Sri Lanka

- Food Fortification Initiative, Nutrition International and CDC provided the training opportunity for Sri Lanka in December 2018.
- Our laboratory had basic supplies and well-trained permanent lab staff recruited by the MoH
- WFP Colombo, CDC and Nutrition International supported with other supplies.

Process of training

- Comprehensive and step by step – one of the best
- Individual attention and friendly atmosphere
- Provide sufficient time to repeat and re-repeat to improve the competency
- Whole process help us to streamline other test in our lab

Current status

Way forward

- Complete analysis of blood samples of National micronutrient survey to disseminate data in December 2019.
- Estimate cost per test to establish regional hub
- Challenges
  - Availability of appropriate calibration materials
  - Access to agents who can provide supplies
- Future support
  - CDC – Provision of external QC and calibration materials
  - Nutrition International – Link with other countries to share experience

Thank you

Kehkashan Begum

MSc

Manager, Nutrition Research Laboratory
Aga Khan University, Karachi

FOLATE TASK TEAM

USING LABORATORY FOLATE STATUS ASSESSMENT TO STRENGTHEN NTD PREVENTION.

KEHKASHAN BEGUM

COUNTRY: PAKISTAN

OCCUPATION: DESIGNATED AS MANAGER IN NUTRITION RESEARCH LABORATORY AT AGA KHAN UNIVERSITY BASED IN KARACHI, PAKISTAN.

VENUE:

- Held at CDC Chamblee campus, Atlanta, Georgia.
- 5 days training program (from 27th Jan 2019 to 1st Feb 2019)
- Trainers: Christine M Pfeiffer, Mindy Zhang, Shameem Jabbar.
- 3 countries participated (Pakistan, Vietnam & Philippines)
- Sponsored by Nutrition International and Global Affairs Canada
- Organized by Folate Task Team, Nutrition International, Canada.

OBJECTIVE:

Pakistan's need to access folate deficiency.

To get expertise on quantifying folate using a globally recommended method.

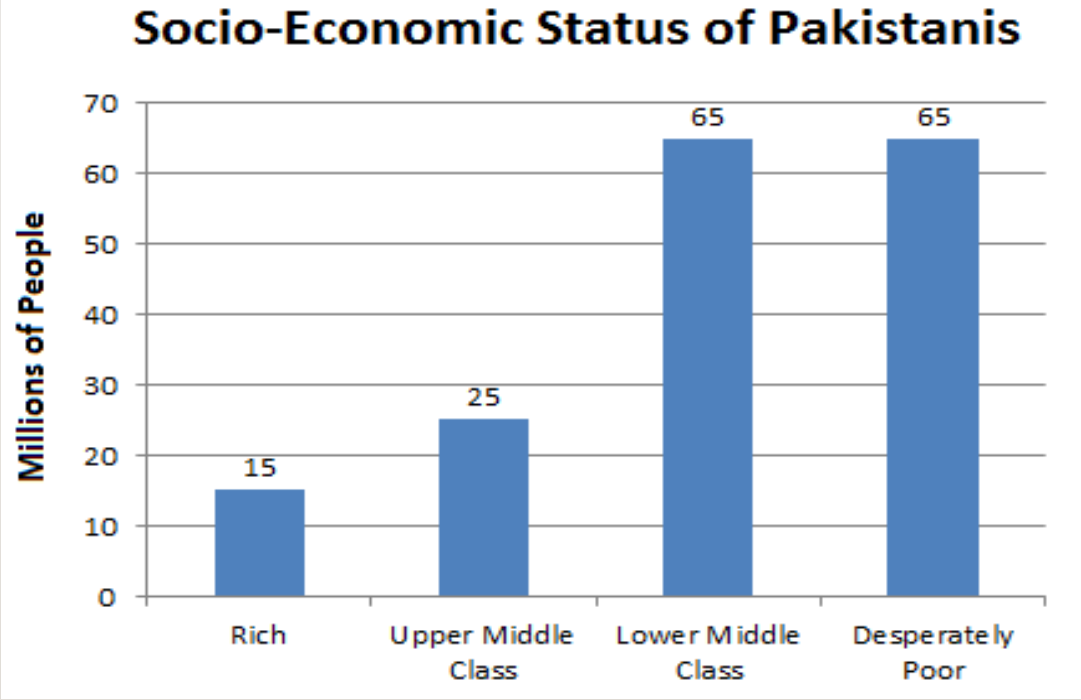
Future Vision

Pakistan's Need To Access Folate Deficiency.

SOCIO-ECONOMIC STATUS OF PAKISTAN

- PAKISTAN is an economic mess. It is well behind other large Asian countries

- In low-income and middle-income countries, anaemia is a major public health problem. (1)



World Health Organization (WHO) and United Nations Children's Fund (UNICEF). Focusing on anaemia: towards an integrated approach for effective anaemia control. 2004

FOLATE DEFICIENCY IN PAKISTAN

In Pakistan, anaemia, and vitamin B12 and folate deficiencies are a severe public health concern among WRA

Table 2 Prevalence of micronutrient deficiencies in women of reproductive age

Micronutrient deficiencies	%	SE	95% CI		n
			Lower	Upper	
Anaemia	50.4	0.5	49.4	51.5	10787
Folate deficiency	50.8	0.6	49.7	51.9	8371
Vitamin B_{12} deficiency	52.4	0.6	51.3	53.5	8400

Prevalence and possible factors associated with anaemia, and vitamin B12 and folate deficiencies in women of reproductive age in Pakistan: analysis of national-level secondary survey data NNS 2011 data:

PREVALENCE OF NEURAL TUBE BIRTH DEFECTS IN PAKISTAN.

Forty-six patients with neural tube defects were seen among 3310 deliveries during a study period in Peshawar (KPK Province), Pakistan.

Incidence of NTDs in our study was 13.90 per 1000 deliveries where as in UK, USA, Denmark and Oman it is around 1-5 per 1000 deliveries.

INCIDENCE AND RISK FACTORS FOR NEURAL TUBE DEFECTS IN PESHAWAR Sania Tanveer Khattak*, Tabassum Naheed**, Shahnaz Akhtar**, Tanveer Jamal** *Department of Gynae/Obs, Saidu Medical College, Swat and **Postgraduate Medical Institute, Lady Reading Hospital, Peshawar, Pakistan

NEURAL TUBE DEFECTS & FOLATE DEFICIENCY IN PAKISTAN.

- A study was conducted in tertiary care hospital of Karachi catering to lower socioeconomic background. Maternal factor related to neural tube defects in same study showed >80% mothers had not taken folic acid during pregnancy.

Table-4: Effect of intake of Folic Acid on neural tube defects.

Folic acid intake	Neural tube defect	Normal pregnancy	Total
Yes	1	500	501
No	45	2810	2855

Raza MZ, Sheikh A, Ahmed SS, Ali S, Naqvi SM. Risk factors associated with birth defects at a tertiary care center in Pakistan. Italian journal of pediatrics. 2012;38:68

To Get Expertise On Quantifying Folate Using A Globally Recommended Method.

NEED OF LABORATORY HARMONIZATION:

1. For Laboratory correlation: (For Quality control purpose)

This could be achieved by:

Getting an opportunity to learn proper PPEs and specific laboratory working environment required for assuring good quality results.

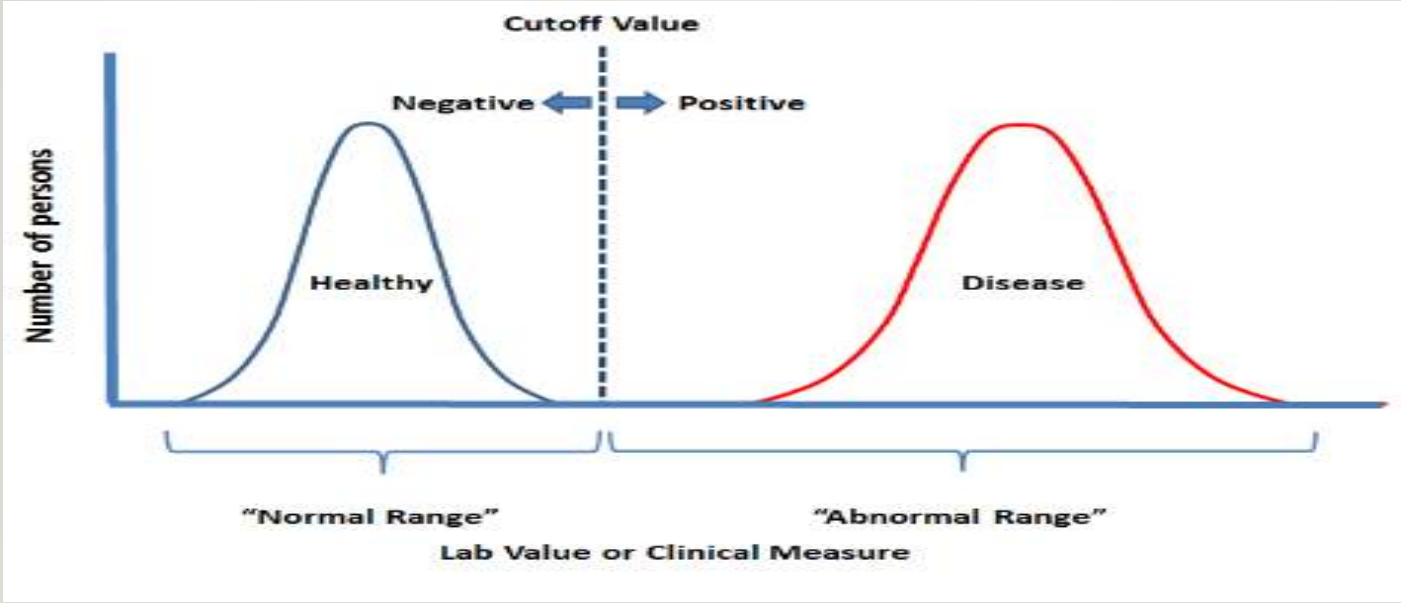
Assuring the Lab proficiency by looking at the advanced equipment being used in well-developed labs.

Observing the standard pre analytical, analytical and post-analytical procedures.

2. VALID AND ACCURATE FOLATE DEFICIENCY ASSESSMENT ACROSS PAKISTAN.

To establish a generalizable cut-off value for folate deficiency assessment.

As of Pakistan's socioeconomic condition, a cost-effective and reliable technique is required for surveying such a highly populated region.



3. ADVANCEMENT OF NUTRITION RESEARCH LAB

- The Aga Khan Hospital serves as the main contributor in the government of Pakistan's health related projects and surveys.
- Aga Khan is the only CAP accredited hospital in Pakistan and also one of the top most biological & biomedical research institute of Pakistan.
- Our laboratories' quality and SOPs serve as a benchmark for other labs all over the Pakistan.

Experience Of Training At CDC.

- Training was provided by highly skilled and innovative researchers.
- Lab was well-equipped and had co-operative and friendly environment.
- Brain storming sessions to achieve informative technical expertise.
- Got opportunity to have hands on experience to perform the assay & QC.

- Came across with the modified and improved techniques of performing microplate assays.
- CDC helped with providing the supplies useful for quick and easy performance of the assay.
- Step by step practical demonstration.

Future Vision

- To become a reference lab in Pakistan for assessing RBC folate.
- To train laboratories on regional basis to individually perform this assay.
- To set a quality control foundation in Pakistan for other laboratories in Pakistan to periodically check the assay performance quality.
- To be able to have a robust folate status in the population of Pakistan and get a way forward for the required intervention for a healthy Pakistan.

THANKS

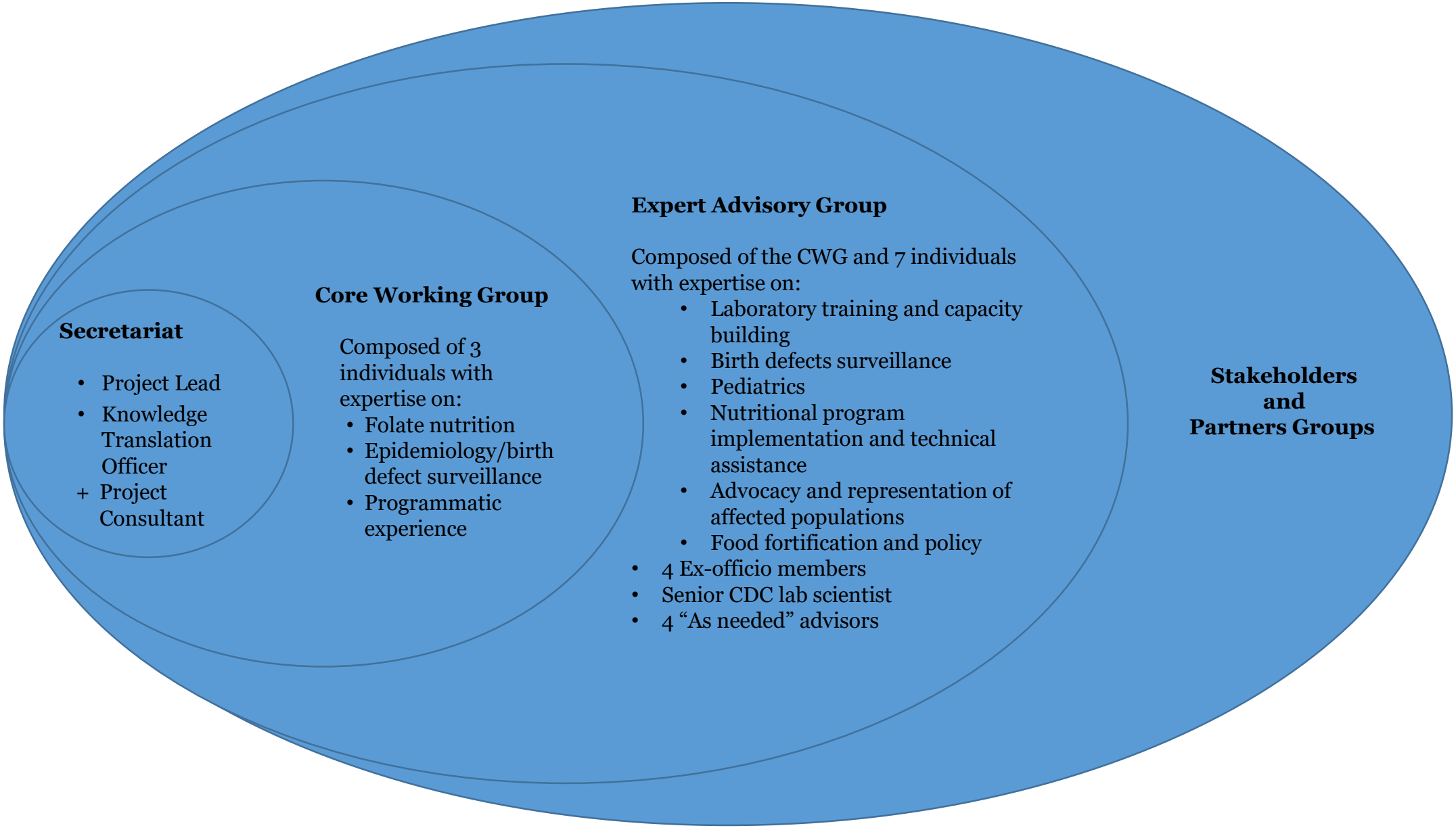
Dr. Homero Martinez

MD, PhD

Senior Technical Advisor
Nutrition International

FOLATE TASK TEAM

Folate Task Team



FOLATE TASK TEAM

GENDER EQUALITY AND NUTRITION

INITIATIVES

THEMES

PROGRAMS

MICRONUTRIENTS

Nutrition Folate Task Team

A global nutrition Task Team for the control of folate insufficiency and folic acid responsive neural tube defects.

The work of the Folate Task Team is being supported by a grant from the Bill & Melinda Gates Foundation.

Through Nutrition Technical Assistance Mechanism (NTEAM)'s Folate Task Team project, Nutrition International is helping to lay the groundwork for implementing a global strategy for the control of folate insufficiency and prevention of related neural tube defects.

Maternal folate insufficiency in the first 28 days of pregnancy is a major cause of neural tube defects. The most common forms of these defects include spina bifida and anencephaly, which are important causes of elective pregnancy terminations, stillbirths, early neonatal deaths, or long-term disabilities. Improving maternal folate status through folic acid fortification or supplementation can dramatically reduce the number of affected births and significantly contribute to reducing neonatal and child mortality.

ADVANCING THE ROADMAP FOR ACTION

Supporting a global strategy for folate

A recent technical consultation convened by the Micronutrient Forum – whose Secretariat was hosted by Nutrition International between 2011 – 2017 – led to the development of a *Roadmap for Action* to advance and accelerate neural tube defects prevention globally. To advance the recommendations featured in this roadmap, Nutrition International has assembled a Folate Task Team, which will coordinate activities for the advancement of the implementation agenda to

NEWS

More support needed by countries to maximize the benefits of mandatory food fortification

FIELD STORIES

Technical Consultation: Folate status in Women and Neural Tube Defect Prevention

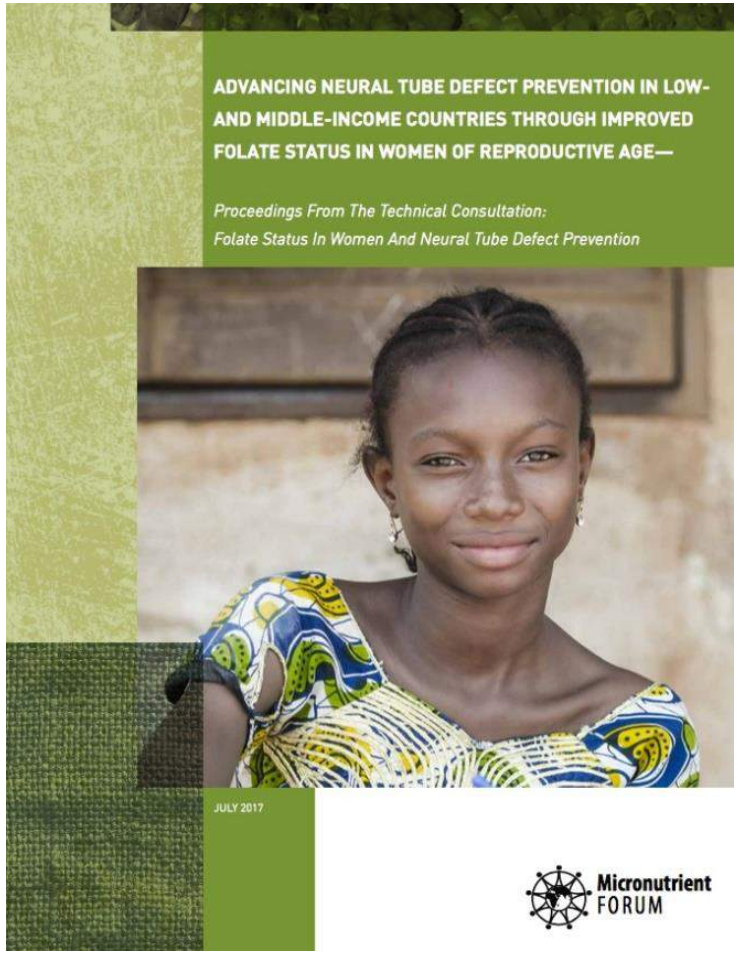
Resources

- http://micronutrientforum.org/folate-consultation/
- http://micronutrientforum.org/content/user_files/2017/10/2017-07FolateTechnicalConsultation-FinalReport.pdf

ISBN: **978-0-9959892-1-4**

- https://www.nutritionintl.org/what-we-do/nteam/team-folate/

- hmartinez@NUTRITIONINTL.ORG



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ISSUE INFORMATION

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FOLATE TASK TEAM

IMPROVING FOLATE STATUS IN WOMEN OF REPRODUCTIVE AGE TO PREVENT NEURAL TUBE DEFECTS

KNOWLEDGE BRIEF

NUTRITION INTERNATIONAL

Nourish Life

FOLATE TASK TEAM

THE IMPORTANCE OF FOLIC ACID FOOD FORTIFICATION TO PREVENT NEURAL TUBE DEFECTS

ADVOCACY BRIEF

NUTRITION INTERNATIONAL

Nourish Life

FOLATE TASK TEAM

SUPPLY CHAIN ANALYSES TO ASSESS THE FEASIBILITY OF NATIONAL FOOD FORTIFICATION PROGRAMS

KNOWLEDGE BRIEF

NUTRITION INTERNATIONAL

Nourish Life

FOLATE MICROBIOLOGIC ASSAY TRAINING VIDEO

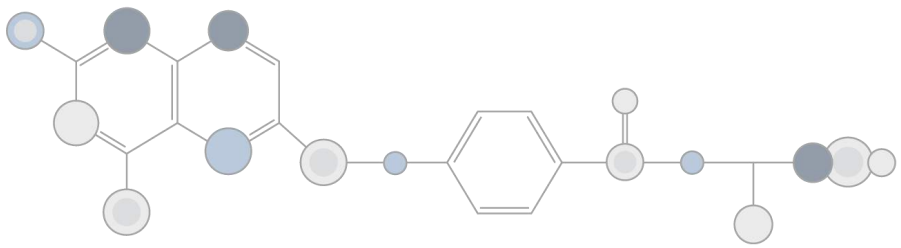
Through a Folate Task Team collaboration with the CDC Foundation, CDC is supporting training and facilitating capacity development to conduct folate microbiologic measurements in multiple international laboratories. Low blood folate concentrations in women of childbearing age increase the risk of neural tube birth defects in their offspring. The folate microbiologic assay will allow countries to assess population folate status. This will have a long-term global health impact by providing countries with the knowledge to identify folate insufficiency, determine appropriate interventions and reduce the risk of neural tube defects.

As part of the collaboration, lab technicians participate in training with CDC and various materials have been developed to assist with training needs. This featured video was created to aid in folate microbiologic assay training.

https://www.cdcfoundation.org/programs/capacity-building-folate-measurement

Further discussion

Please feel free to submit a question via the chat box for any of our speakers

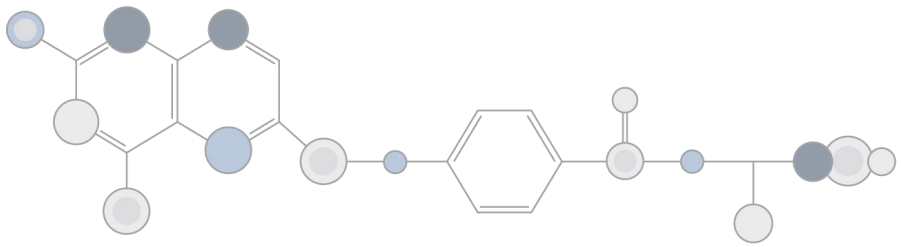


FOLATE TASK TEAM

Closing remarks from Dr. Martinez

For more information please contact Dr. Martinez at folatetaskteam@nutritionintl.org

A recording of this webinar and a PDF of the slides will be made available via the Folate Task Team webpage at https://www.nutritionintl.org/what-we-do/nteam/folate-task-team/



FOLATE TASK TEAM

Thank you!

FOLATE TASK TEAM