

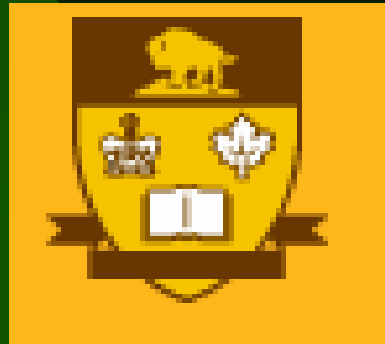
Agreement Between Dietary and Biological Methods in Assessing Folate status: Updated Folate database.

31st National Nutrient Databank Conference: Turning
Concepts into Reality

April 26,2007

Aysheh Shuaibi

University of Manitoba



Biomarkers in nutritional epidemiology

- ❖ **Diet** is of key importance in affecting the risk of most chronic diseases
- ❖ **Nutritional epidemiology** provides the only direct approach to the quantification of risks from diet
- ❖ The introduction of **biomarkers**
 - calibrate the measurement error in dietary reports
 - additional measures of exposure

Aspects of Dietary Intake

- ❖ The collection of biological should become the routine in **nutritional epidemiology**.
- ❖ The validity of dietary assessment methods should be established before diet-disease associations are reported

Objective

To develop and validate a folate database for assessing folate status

Study protocol

- Design: A cross-sectional epidemiological survey
- Subjects: the study was carried out with a group of 95 women who were between 17-24
- Blood samples were obtained for biochemical assays
- Food consumption was assessed by 3DFR & Food Choice Map (FCM)

What is Food Choice Map



DRINK	FRUIT	VEGETABLE	EX
			
			

Examples of stored pictures used to complete interview grids

Dietary Entry Screen

Person	Weight pre-preg today		Height	
ID code	2	kg or	55	cm, or 156
Weeks pregnant		lbs or		inches
Age in years		BMI		

© Northern Technical Data Inc.

Save this record:

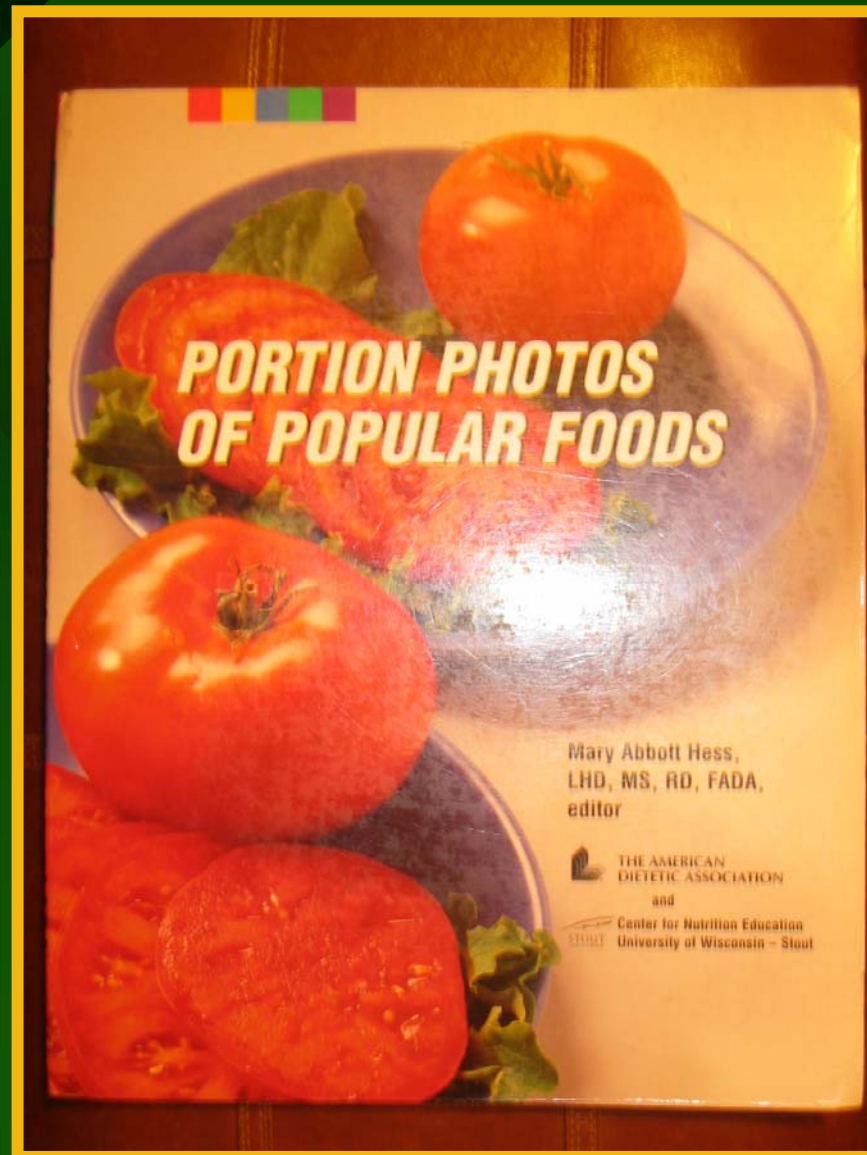
1. Open the file named 'Results'
2. Copy the data from C8 to G77 and paste in the Results file, FoodData sheet
3. Copy and paste the ID number in the first column (A) of the Results file, FoodData sheet

Food	Time	Serving	Wt-Multi	Meal	Food	Serving	Grams	Food description
ButtMrgTbLow	7125	120	5		1	4450	0	Mveg, Grape Leaves (Vine Leaves), Canned
HotcOatMaple	6110	130	256		2	4452	0	Mveg, Succotash, Boiled, Drained
Milk1%	2107	150	233		3	4453	0	Mveg, Succotash, Raw
Water	8601	260	296		4	4454	0	Mveg, Vegetables, Mixed, Canned, Drained Solids
BrdBHmde	1134	330		56	5	4455	0	Mveg, Vegetables, Mixed, Frozen, Boiled, Drained
SaladGrnLeafLettuce	4402	330	360		6			
DresCaes	7152	330	26		7			
SoupMush	6439	340	352		8			
BrdBWhol	1133	340		56	9			
CracWhetBak	7535	340	66	0.5	10			
Milk1%	2107	370	233		11			
SoftNecRaw	5337	410	355		12			
BananaRaw	5111	420	237		13			
BrdM	1150	435		28	14			
ButtMrgTbLow	7125	430	5		15			
Water	8601	470	296		16			
MxVegFrzBld	4455	520	193		17			
0					18			
					19			
					20			

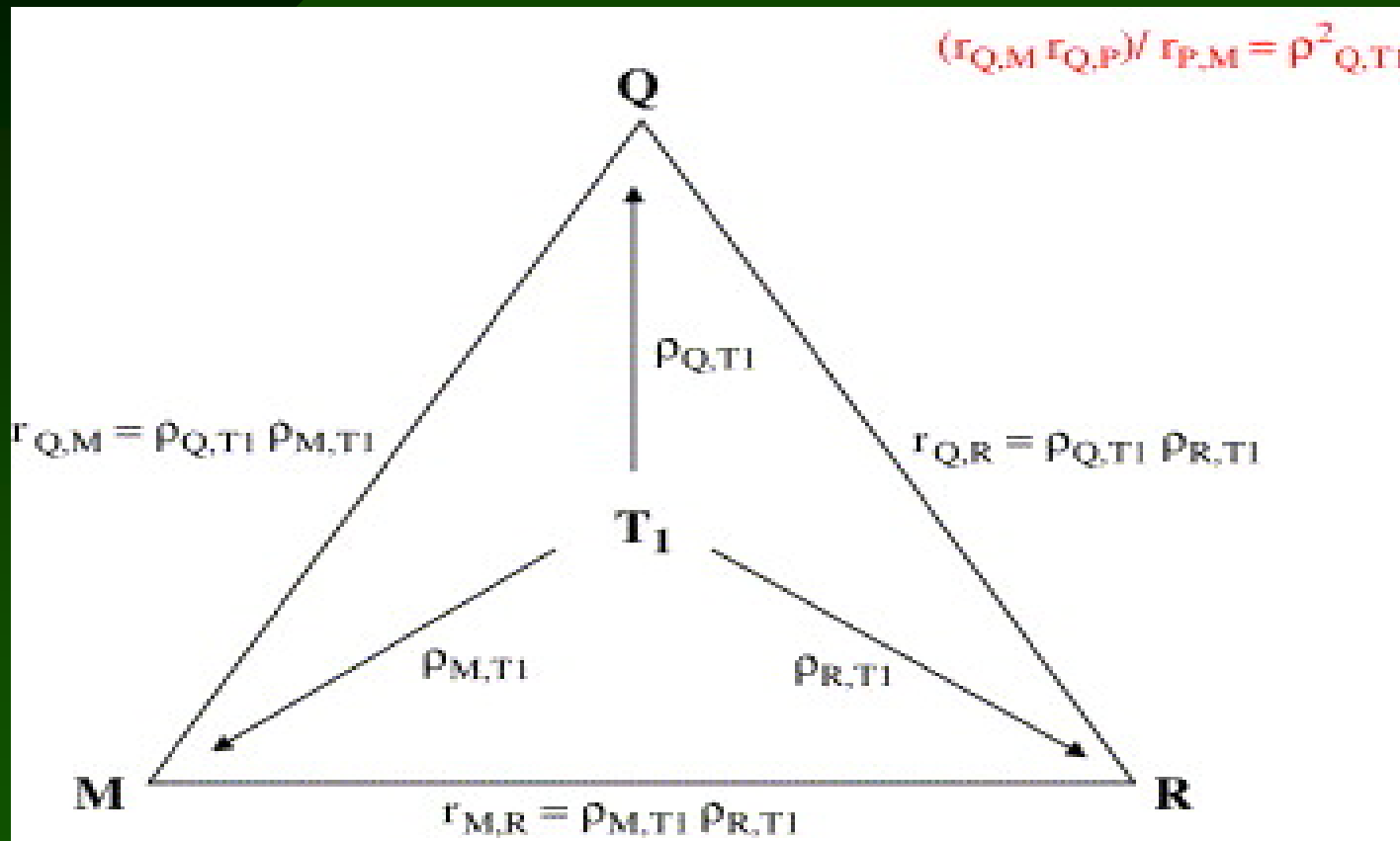
Alternatives for the last food item entered



Portion size



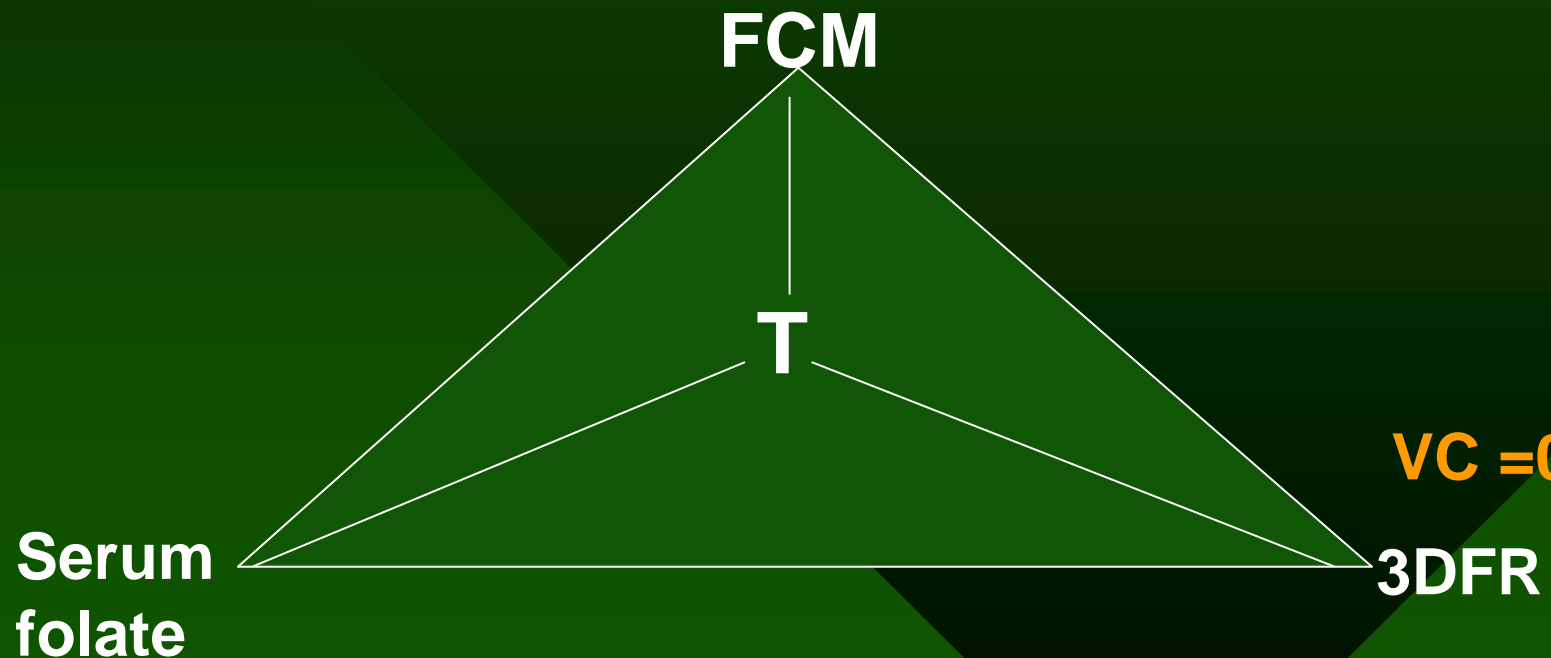
The Method of Triads Model



Validation of FCM measurements (Q) by comparison with measurements based on food consumption records (R) and a biomarker (M)-the triad method. Kaaks& Ferrari, 2005

Validation of FCM measurements by comparison with measurements based on 3DFR and a serum folate- the triad method

VC= 0.97



Database development

- The CNF 2001

The sum of natural folate and folic acid μg

- Updated database (Updated DB)

Convert all forms of folate in to DFES

Add the intake from supplements

$$\text{DFE} = \text{FF} + (\text{FA} * 1.7)$$

Adjusted folate intake median (1st-9th percentile) as estimated by both databases

Total folate intake

CNF ($\mu\text{g}/\text{d}$)	406 ^a (257-810)
Updated database ($\mu\text{g DFEs}/\text{d}$)	515 ^b (331-1170)

Adjusted folate intake median (1st-9th percentile) Dietary vs. total

	<u>Total folate intake</u>
Dietary folate intake (μg DFEs/d)	463 ^a (324-676)
Total folate intake (μg DFEs/d)	515 ^b (331-1170)

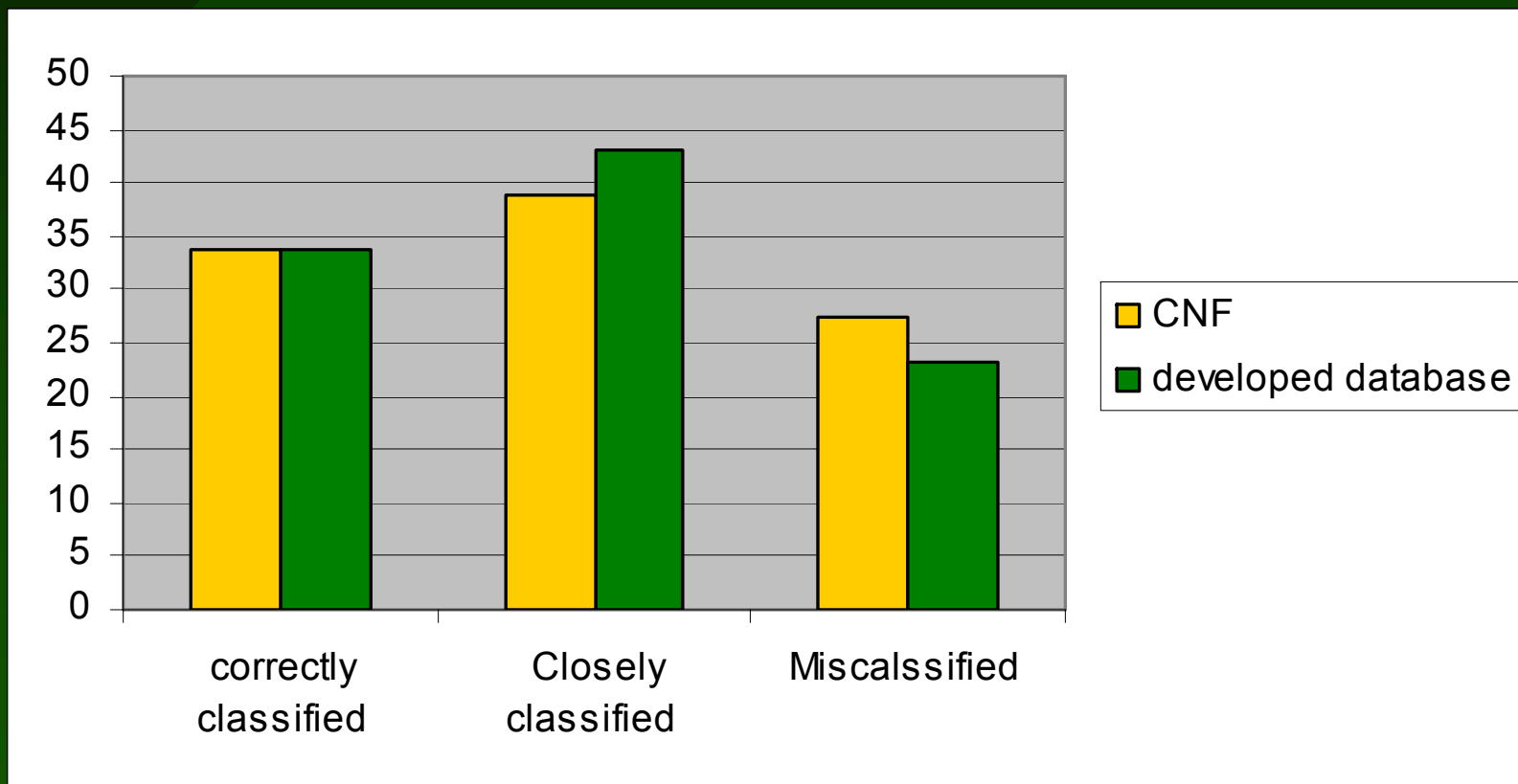
Correlations between the adjusted total folate intakes estimated by both databases vs. serum folate

	Serum folate	P value
CNF ($\mu\text{g}/\text{d}$)	0.40 ^a	P<0.01
Updated database ($\mu\text{g DFEs}/\text{d}$)	0.43 ^a	P< 0.01

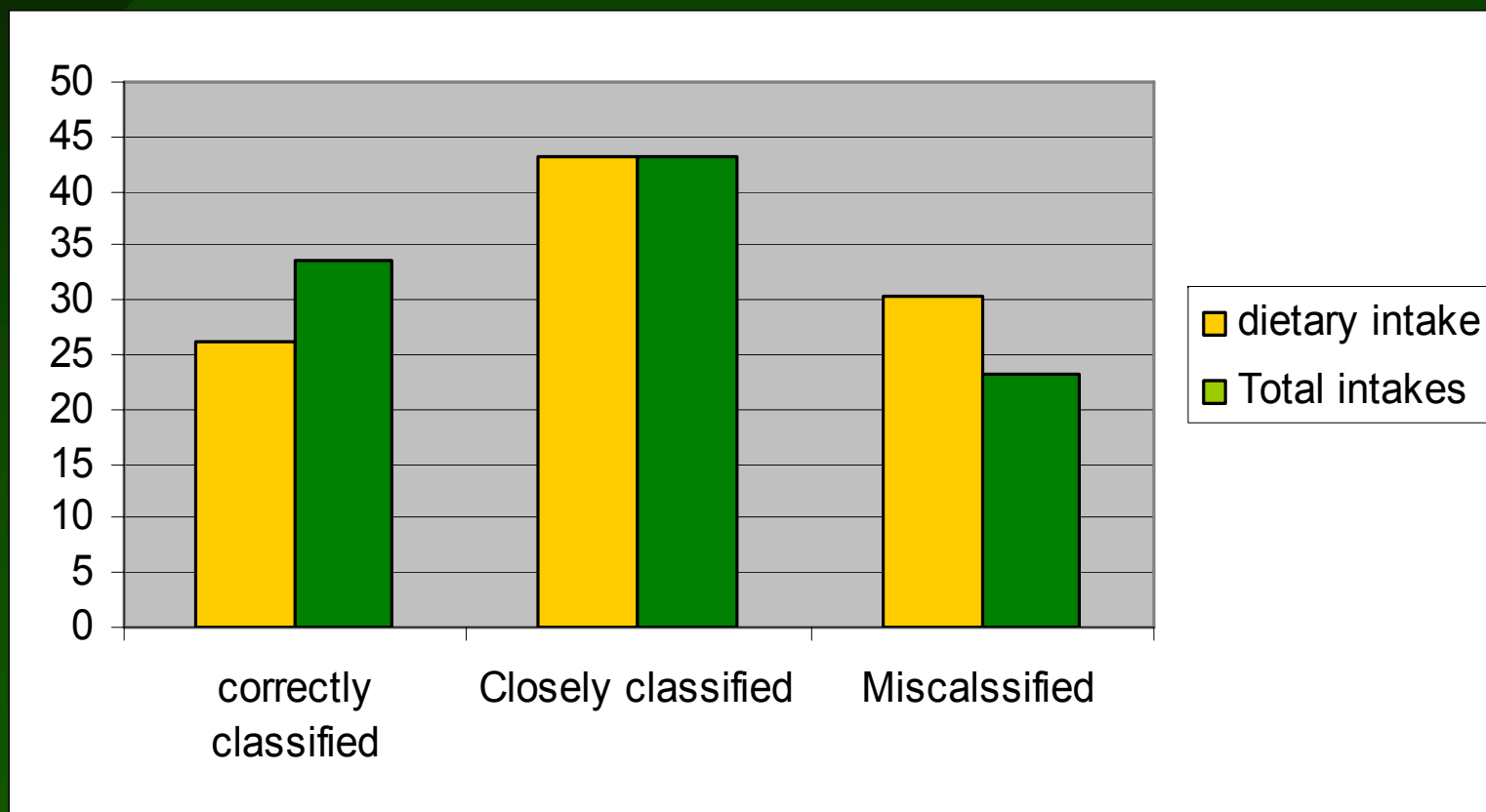
Correlations between the adjusted folate intake (dietary vs. total) estimated by updated DB vs. serum folate

	Serum folate	P value
Dietary folate intake	0.30 ^a	P<0.01
Total folate intake	0.43 ^a	P< 0.01

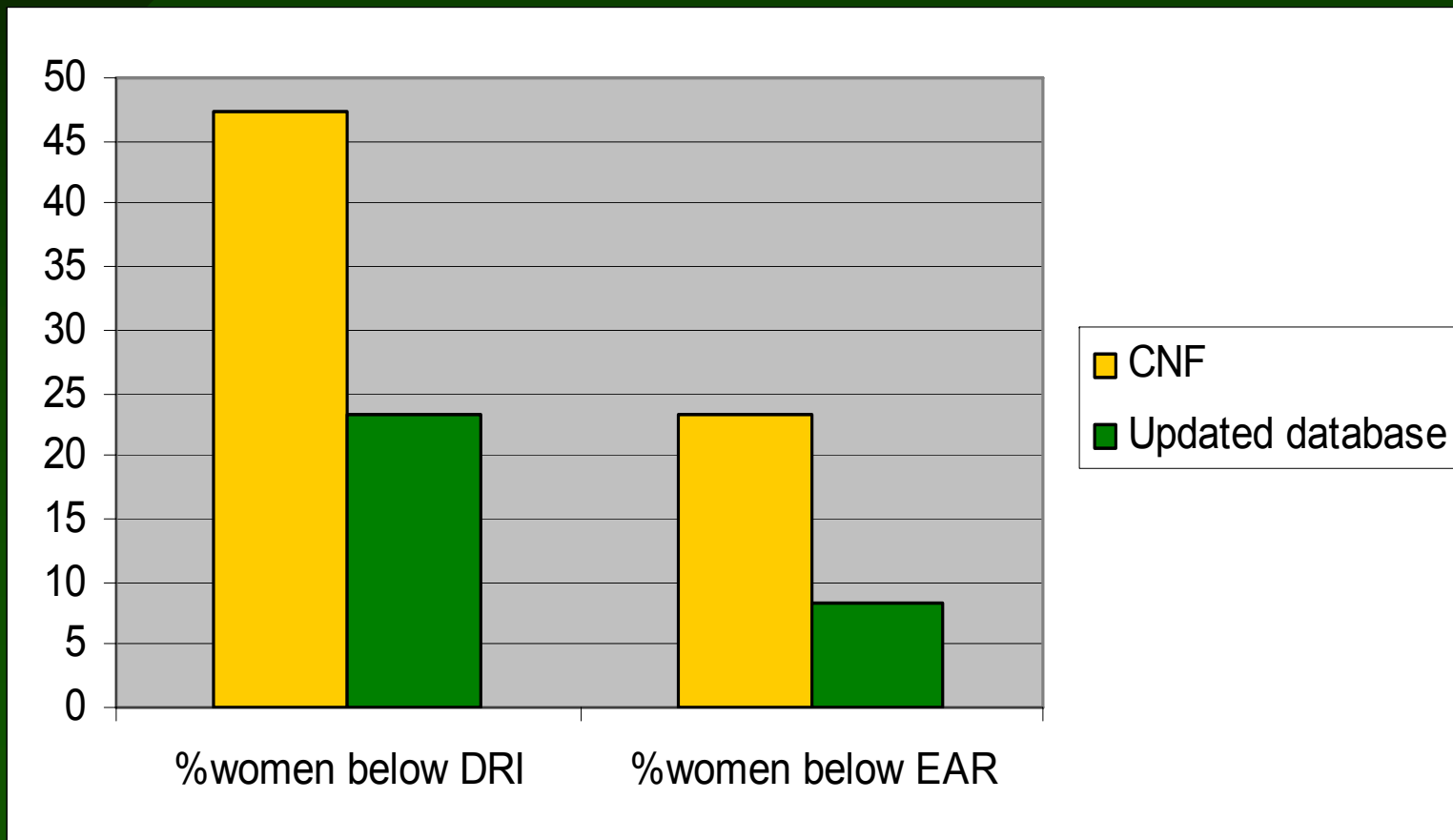
Percentage of participants correctly, closely or misclassified into quartiles of folate intakes as determined using both databases compared with classification by serum folate



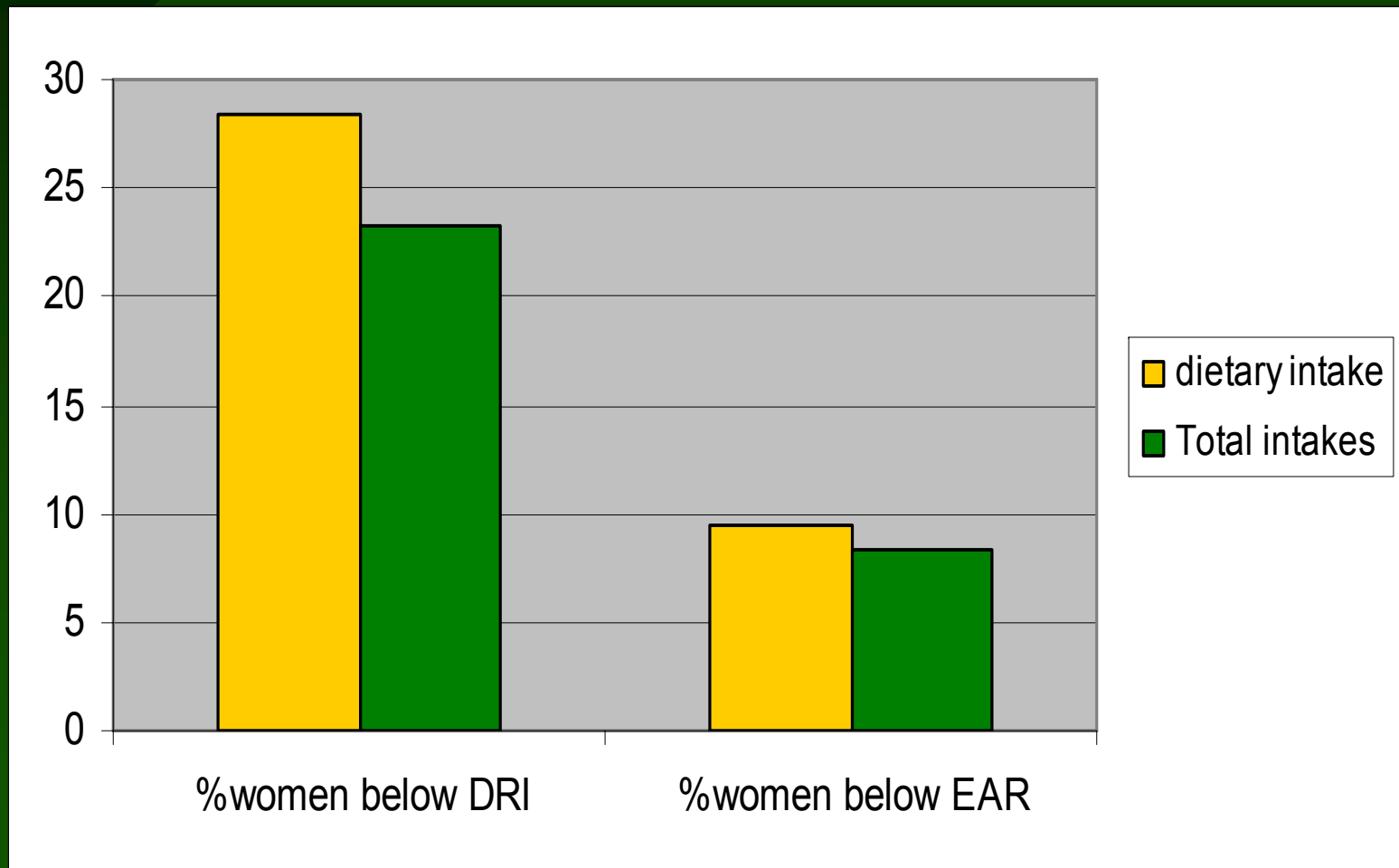
Percentage of participants correctly, closely or misclassified into quartiles of folate (dietary vs. total intakes) compared with classification by serum folate



Frequent of intakes below the DRI and EAR values in the study population



Frequent of intakes below the DRI and EAR values in the study population



frequency of women with values deviating from the cutoff

	% women below the cutoff
Serum folate	0
RBC folate	0
EAR	
CNF	23.1
updated folate database	8

Conclusion

- Nutrient databases must reflect the changes made in DRI
- Updated folate database could predict folate nutritional status
- Biochemical analyses of folate status is affected by intake and bioavailability

Acknowledgment

❖ Dr. Gustaaf Sevenhuysen & Jim House

❖ Study participants

❖ Sponsors:

❖ ARDI

❖ Canada Egg
Marketing Agency

