

External Quality Assurance (EQA) of G6PD Quantitative Test

Survey No. : RH2015-07
Sample sent : [21 set](#)

Sample sent on : 2015/07/06
Results reported (%) : 20 (95%)

Reporting deadline : 2015/07/13

1. [Summary report on this EQA survey](#)
2. [The distribution of G6PD reported in this survey](#)
3. [The distribution of Hb reported in this survey](#)
4. [Long term observation of inter laboratory CV vs. surveys](#)
5. [Long term observation of inter laboratory CV vs. G6PD activities](#)
6. [Deviation graph for individual laboratory](#)

Referral Hosp. G6PD and Hemoglobin(Hb) Quantitative Test Results

Lab	Referral Hosp.	Report (day)	Sample 1				Sample 2				Sample 3				Hb 1 (g/dL)	Hb 2 (g/dL)	Hb 3 (g/dL)
			(U/gHb)	D%	z score	SDI	(U/gHb)	D%	z score	SDI	(U/gHb)	D%	z score	SDI			
F01	None	N.R.	N.R.	N.R.%	N.R.	N.R.	N.R.	N.R.%	N.R.	N.R.	N.R.	N.R.%	N.R.	N.R.	N.R.	N.R.	N.R.
F02	F02	7	3.2	14.3%	2.0	0.5	11.8	6.3%	0.9	0.3	11.1	8.8%	1.3	0.3	2.2	2.0	2.0
F03	F03	5	3.7	32.1%	4.6	1.3	13.4	20.7%	3.0	1.4	13.7	34.3%	4.9	2.0	2.1	2.1	2.0
F04	F04	7	2.3	-17.9%	-2.6	-1.0	10.0	-9.9%	-1.4	-0.9	9.4	-7.8%	-1.1	-0.9	2.2	2.1	2.1
F05	F05	3	3.8	35.7%	5.1	1.5	13.5	21.6%	3.1	1.5	13.8	35.3%	5.0	2.1	2.1	2.1	1.9
F06	F06	3	2.7	-3.6%	-0.5	-0.3	11.0	-0.9%	-0.1	-0.2	9.9	-2.9%	-0.4	-0.5	2.2	2.0	2.1
F07	F07	3	2.2	-21.4%	-3.1	-1.2	9.1	-18.0%	-2.6	-1.5	8.9	-12.7%	-1.8	-1.2	2.1	2.0	2.0
F08	F08	6	3.4	21.4%	3.1	0.8	12.3	10.8%	1.5	0.7	11.5	12.7%	1.8	0.5	2.5	2.2	2.2
F09	F09	7	2.3	-17.9%	-2.6	-1.0	9.8	-11.7%	-1.7	-1.0	9.4	-7.8%	-1.1	-0.9	2.3	2.2	2.1
F10	F10	7	2.3	-17.9%	-2.6	-1.0	10.0	-9.9%	-1.4	-0.9	8.7	-14.7%	-2.1	-1.3	2.4	2.3	2.3
F11	F11	4	3.4	21.4%	3.1	0.8	12.7	14.4%	2.1	0.9	12.4	21.6%	3.1	1.1	2.2	2.1	2.0
F12	F12	7	3.8	35.7%	5.1	1.5	14.5	30.6%	4.4	2.1	14.1	38.2%	5.5	2.3	2.3	2.2	2.2
F13	F13	7	2.7	-3.6%	-0.5	-0.3	11.5	3.6%	0.5	0.1	10.4	2.0%	0.3	-0.2	2.1	1.9	2.0
F14	F14	3	3.1	10.7%	1.5	0.3	10.8	-2.7%	-0.4	-0.3	9.9	-2.9%	-0.4	-0.5	2.3	2.1	2.0
F15	F15	4	2.7	-3.6%	-0.5	-0.3	10.2	-8.1%	-1.2	-0.7	9.9	-2.9%	-0.4	-0.5	2.2	2.1	2.0
F16	F16	6	2.8	0.0%	0.0	-0.2	11.2	0.9%	0.1	-0.1	11.1	8.8%	1.3	0.3	2.2	2.1	2.1
F17	F17	7	2.8	0.0%	0.0	-0.2	10.2	-8.1%	-1.2	-0.7	9.8	-3.9%	-0.6	-0.6	2.3	2.1	2.1
F18	F18	5	2.9	3.6%	0.5	0.0	11.8	6.3%	0.9	0.3	11.3	10.8%	1.5	0.4	2.6	2.3	2.2
F19	F19	3	3.4	21.4%	3.1	0.8	11.7	5.4%	0.8	0.3	11.0	7.8%	1.1	0.2	2.3	2.1	2.1
F20	F20	2	2.7	-3.6%	-0.5	-0.3	10.9	-1.8%	-0.3	-0.3	9.9	-2.9%	-0.4	-0.5	2.2	2.1	2.1
F21	F21	3	2.7	-3.6%	-0.5	-0.3	10.5	-5.4%	-0.8	-0.5	9.6	-5.9%	-0.8	-0.7	2.3	2.1	2.2
Total participating laboratories = 21																	
Xa (Median)	-	5	2.8				11.1				10.2				2.2	2.1	2.1
σ _p	-	-	0.196				0.777				0.714				-	-	-
Range	-	2-7	2.2-3.8				9.1-14.5				8.7-14.1				2.1-2.6	1.9-2.3	1.9-2.3
n	-	-	20				20				20				20	20	20
Mean	-	-	2.9				11.3				10.7				2.2	2.1	2.1
S.D.	-	-	0.6				1.5				1.5				0.1	0.0	0.1
C.V.	-	-	20.7%				13.3%				14.0%				4.5%	0.0%	4.8%
Note:																	
1. D% = [(X - Xa) / Xa] x 100% ; X = Your Results , Xa = Assigned value																	
2. z score = D / σ _p ; D = X - Xa, σ _p = SD for proficiency assessment																	
3. SDI = (X - Mean) / SD ; SD = standard deviation of peer group																	
4. The assigned value (Xa) is the median of all the results reported of this EQA sample																	
5. SD for proficiency assessment (σ _p) = 7% x Xa ; but while Xa < 2.9 U/gHb, σ _p = 0.2																	
6. Robust results (Mean and SD) were calculated by Algorithm A according to ISO 13528:2005																	
7. Acceptable : z <= 2; Caution : 2 < z <= 3; Unsatisfactory : z > 3																	
8. Maximum Allowable Deviation (MAD) = 3 x (σ _p / Xa) x 100%																	

Ordered by Referral Hosp.



Newborn Screening QA Program
Preventive Medicine Foundation



Newborn Screening Reference Center
National Institutes of Health



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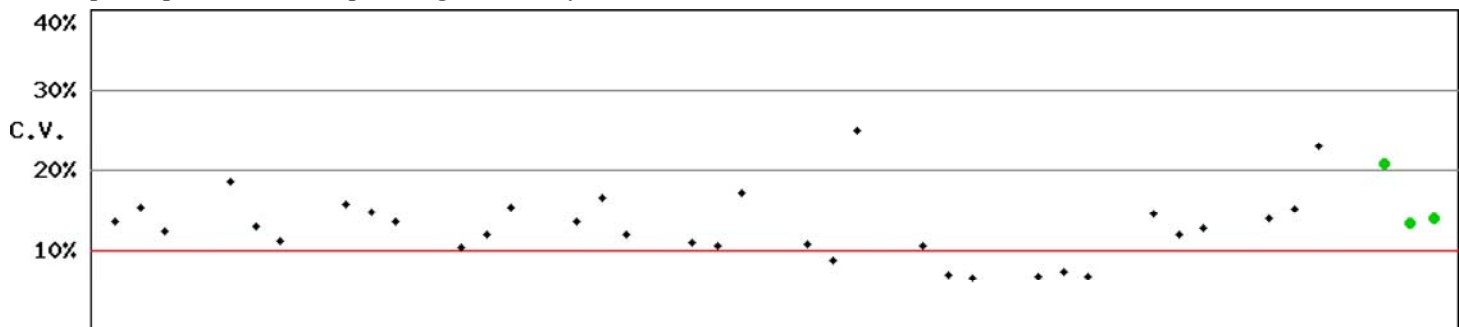
625 Pedro Gil St., Ermita, Manila 1000, Philippines

Fax : + 632-522-4396; info@newbornscreening.ph

Long Term Observation of Blood G6PD Quantitative Test QA Survey Results

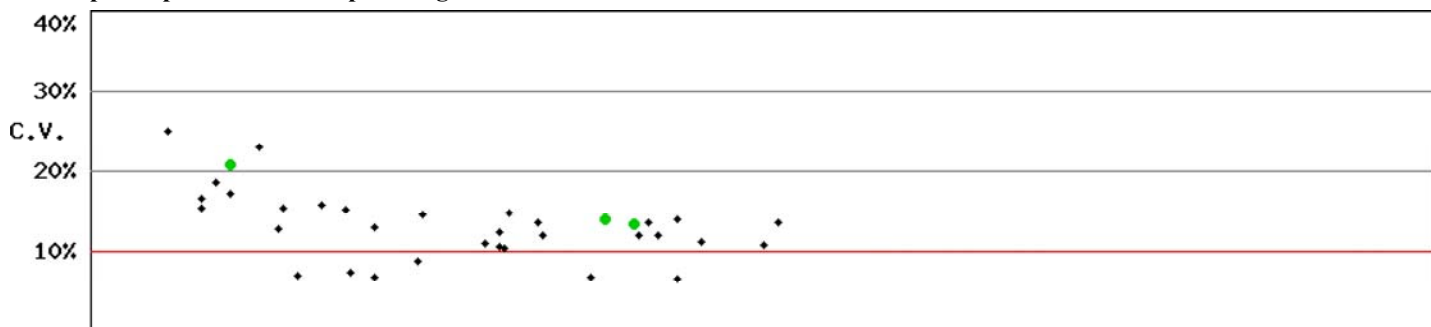
Survey No : RH2015-07 (in green ●)

- Total participants' CV result plotted against surveys



BatchNo RH2013-03 RH2013-05 RH2013-07 RH2013-09 RH2013-11 RH2014-01 RH2014-04 RH2014-07 RH2014-10 RH2015-01 RH2015-04 RH2015-07
Fig RH-2.1

- Total participants' CV result plotted against G6PD activities



G6PD (U/gHb) 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
n: 36 Median of CV: 13.1% Mean of CV: 13.2% SD of CV: 4.2% Range of CV: 6.6%-25.0% (date: RH2013-03 to RH2015-07)
Fig RH-2.2

* Mean and SD are calculated by Robust method according to ISO 13528:2005 since 2014

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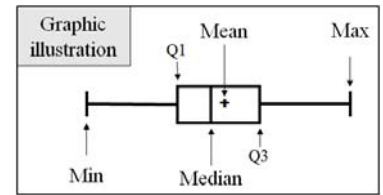
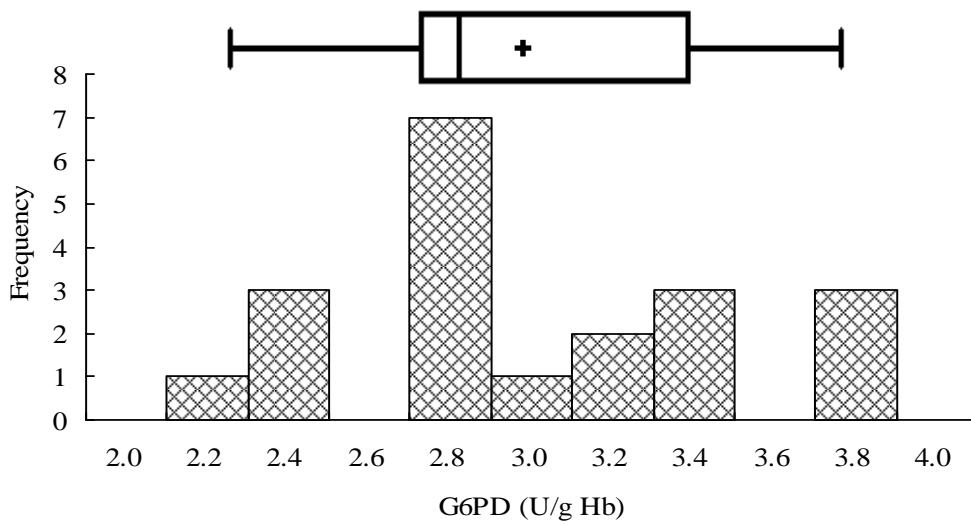
RH2015-07 External Quality Assurance -G6PD

Survey No. : RH2015-07

Sample sent on : 2015/07/06

Reporting deadline : 2015/07/13

Results reported (%) : 95.2%



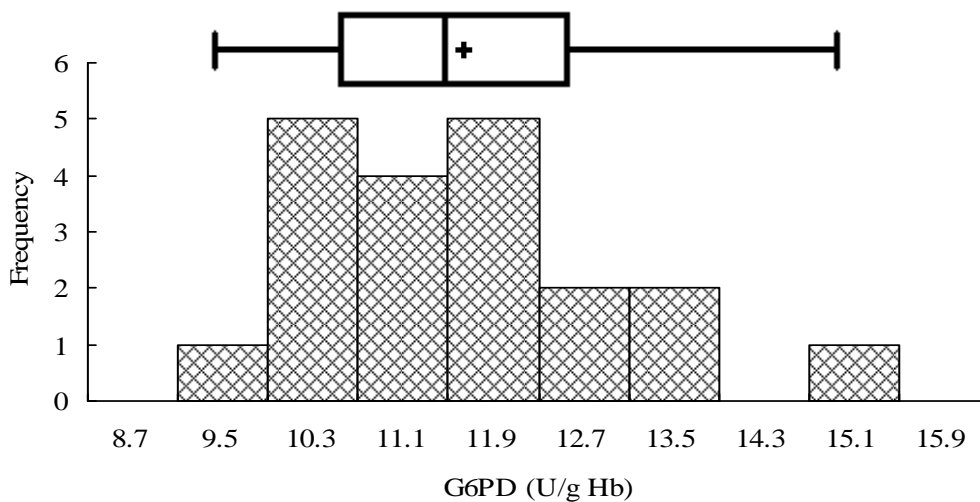
Sample 1

Median = 2.8 (n = 20)

Mean* = 2.9 (n = 20)

SD* = 0.6

CV = 20.7%



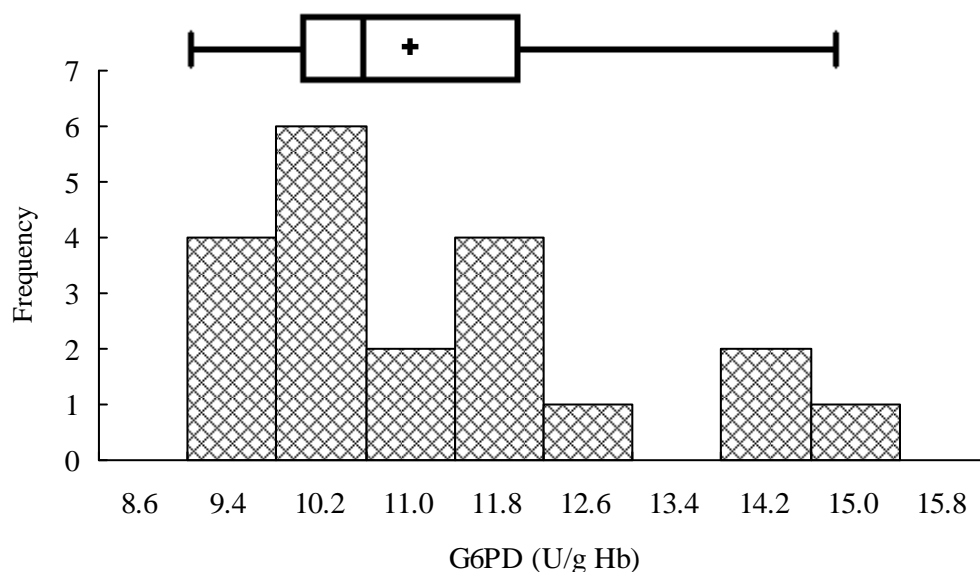
Sample 2

Median = 11.1 (n = 20)

Mean* = 11.3 (n = 20)

SD* = 1.5

CV = 13.3%



Sample 3

Median = 10.2 (n = 20)

Mean* = 10.7 (n = 20)

SD* = 1.5

CV = 14.0%

*Robust results (Mean and SD) were calculated by Algorithm A according to ISO 13528:2005

Fig PHIQ-3

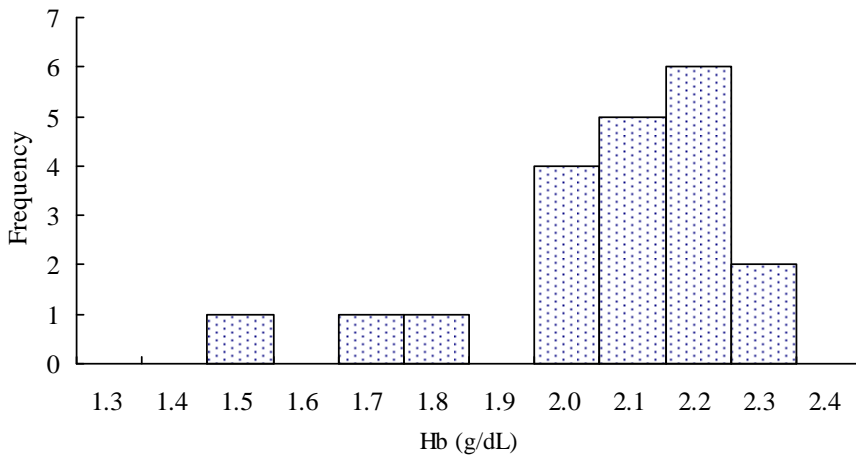
RH2015-07 External Quality Assurance -Hb

Survey No. : RH2015-07

Sample sent on : 2015/07/06

Reporting deadline : 2015/07/13

Results reported (%) : 95.2%



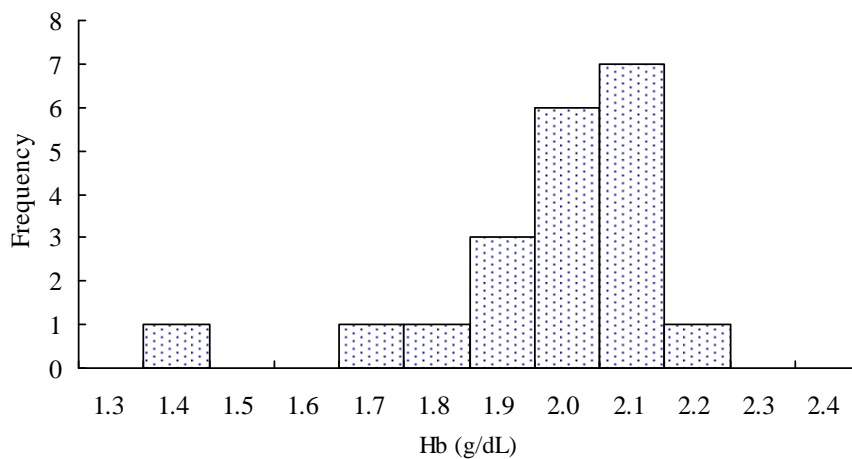
Sample 1

Median = 2.2 (n = 20)

Mean* = 2.2 (n = 20)

SD* = 0.1

CV = 4.5%



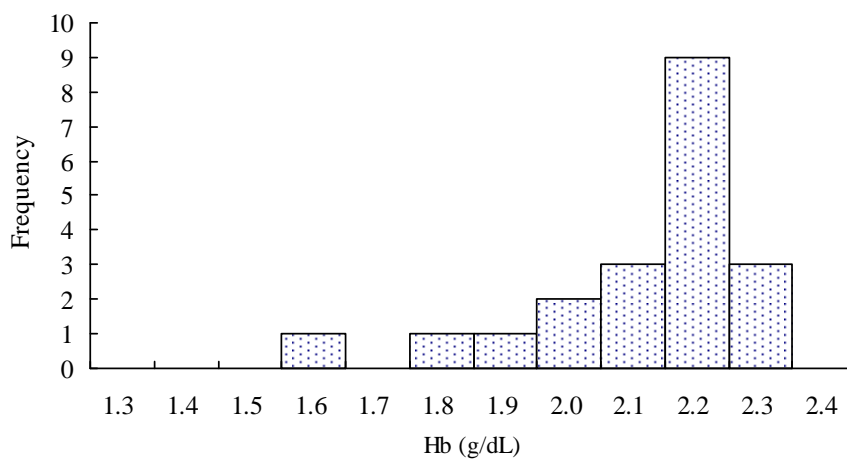
Sample 2

Median = 2.1 (n = 20)

Mean* = 2.1 (n = 20)

SD* = 0.0

CV = 0.0%



Sample 3

Median = 2.1 (n = 20)

Mean* = 2.1 (n = 20)

SD* = 0.1

CV = 4.8%

*Robust results (Mean and SD) were calculated by Algorithm A according to ISO 13528:2005

Fig PHIQ-4

External Quality Assurance (EQA) Program

for

G6PD Quantitative Test in Philippines

Survey No. : RH2015-07 Sample sent on : 2015 / 07 / 06

Reporting deadline : 2015 / 07 / 13

This Survey [S2](#) has been used in 2010-2014 (n = 6 ; Survey / Sample No.) :

[RH2010-07/S3](#) ; [RH2011-01/S1](#) ; [RH2011-09/S3](#) ; [RH2012-01/S1](#) ; [RH2013-09/S2](#) ; [RH2014-10/S1](#) ; [RH2015-07/S2](#) ;

Intermediate Measurement Precision of G6PD Quantitative Test

Lab	Survey : RH2015-07 / Sample 2		Program period: 2010 ~ 2014²			
	U/gHb	SDI ¹	Mean	n	SD	CV
F02	11.8	0.0	11.8	6 ³	1.6	13.6%
F03	13.4	0.3	12.8	7	2.1	16.4%
F04	10.0	0.1	9.9	7	1.4	14.1%
F05	13.5	0.3	13.0	7	1.5	11.5%
F06	11.0	-0.8	12.0	6 ⁴	1.2	10.0%
F07	9.1	-0.9	12.9	6 ⁴	4.2	32.6%
F08	12.3	0.3	11.5	7	2.6	22.6%
F09	9.8	0.5	8.0	7	3.8	47.5%
F10	10.0	-0.6	11.1	7	1.7	15.3%
F11	12.7	1.0	11.4	4	1.3	11.4%
F12	14.5	—	—	3	—	—
F13	11.5	—	—	3	—	—
F14	10.8	—	—	3	—	—
F15	10.2	—	—	3	—	—
F16	11.2	—	—	2	—	—
F17	10.2	—	—	2	—	—
F18	11.8	—	—	1	—	—
F19	11.7	—	—	1	—	—
F20	10.9	—	—	1	—	—
F21	10.5	—	—	1	—	—
Total participating laboratories = 15						
Median	11.1	0.2	11.7	—	1.7	14.7%
Range	9.1 ~ 14.5	-0.9 ~ 1.0	8.0 ~ 13.0	—	1.2 ~ 4.2	10% ~ 47.5%

1). Standard Deviation Index (SDI) = (Individual Result - Individual Mean) / Individual SD

2). Survey / Sample No. : [RH2010-07/S3](#) ; [RH2011-01/S1](#) ; [RH2011-09/S3](#) ; [RH2012-01/S1](#) ; [RH2013-09/S2](#) ; [RH2014-10/S1](#) ; [RH2015-07/S2](#) ;

3). Not participated in the [RH2012-01](#) survey.

4). Not participated in the [RH2014-10](#) survey.

*. Intermediate Measurement Precision ; ISO 3534-2:2006

** . Robust results (Mean and SD) were calculated by Algorithm A according to ISO 13528:2005