

External Quality Assurance (EQA) of G6PD Quantitative Test

Survey No. : RH2017-03  
 Sample sent : [18 set](#)

Sample sent on : 2017/07/03  
 Results reported (%) : 18 (100%)

Reporting deadline : 2017/07/10

- 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](#)

Summary Report of 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			
F02	F02	7	7.1	-7.8%	-1.1	-1.2	9.7	-9.3%	-1.3	-1.4	2.8	-17.6%	-2.4	-1.9	2.0	2.4	2.5
F03	F03	6	8.1	5.2%	0.7	0.8	11.3	5.6%	0.8	0.8	3.5	2.9%	0.4	0.3	2.0	2.5	2.5
F04	F04	4	8.0	3.9%	0.6	0.6	11.0	2.8%	0.4	0.4	3.6	5.9%	0.8	0.6	2.1	2.6	2.6
F05	F05	4	8.5	10.4%	1.5	1.5	11.6	8.4%	1.2	1.3	3.7	8.8%	1.2	1.0	1.9	2.3	2.3
F07	F07	7	6.9	-10.4%	-1.5	-1.5	9.2	-14.0%	-2.0	-2.1	2.3	-32.4%	-4.4	-3.5	2.2	2.6	2.6
F09	F09	5	7.9	2.6%	0.4	0.4	11.1	3.7%	0.5	0.6	3.3	-2.9%	-0.4	-0.3	1.9	2.2	2.3
F10	F10	4	7.6	-1.3%	-0.2	-0.2	10.7	0.0%	0.0	0.0	3.4	0.0%	0.0	0.0	2.1	2.4	2.5
F11	F11	2	7.6	-1.3%	-0.2	-0.2	10.5	-1.9%	-0.3	-0.3	3.2	-5.9%	-0.8	-0.6	2.0	2.4	2.4
F13	F13	7	8.2	6.5%	0.9	1.0	11.4	6.5%	0.9	1.0	3.6	5.9%	0.8	0.6	2.1	2.5	2.5
F14	F14	5	7.1	-7.8%	-1.1	-1.2	10.0	-6.5%	-0.9	-1.0	3.0	-11.8%	-1.6	-1.3	2.0	2.3	2.4
F17	F17	4	9.2	19.5%	2.8	2.9	12.6	17.8%	2.5	2.6	4.1	20.6%	2.8	2.3	2.0	2.5	2.6
F19	F19	2	7.3	-5.2%	-0.7	-0.8	10.5	-1.9%	-0.3	-0.3	3.4	0.0%	0.0	0.0	2.1	2.5	2.5
F20	F20	7	7.6	-1.3%	-0.2	-0.2	10.6	-0.9%	-0.1	-0.1	3.3	-2.9%	-0.4	-0.3	2.3	2.8	2.8
F21	F21	7	7.6	-1.3%	-0.2	-0.2	10.3	-3.7%	-0.5	-0.6	3.3	-2.9%	-0.4	-0.3	2.0	2.3	2.5
F22	F22	5	8.0	3.9%	0.6	0.6	11.0	2.8%	0.4	0.4	3.6	5.9%	0.8	0.6	2.0	2.3	2.4
F24	F24	6	7.7	0.0%	0.0	0.0	9.8	-8.4%	-1.2	-1.3	3.3	-2.9%	-0.4	-0.3	1.9	2.4	2.3
F25	F25	7	7.9	2.6%	0.4	0.4	10.7	0.0%	0.0	0.0	3.7	8.8%	1.2	1.0	2.1	2.6	2.6
F26	F26	3	7.3	-5.2%	-0.7	-0.8	10.2	-4.7%	-0.7	-0.7	3.2	-5.9%	-0.8	-0.6	2.0	2.3	2.4
Total participating laboratories = 18																	
Xa (Median)	-	5	7.7				10.7				3.4				2.0	2.4	2.5
u <sub>Xa</sub>	-	-	0.135				0.187				0.080				-	-	-
σ <sub>p</sub>	-	-	0.539				0.749				-				-	-	-
σ <sub>p'</sub>	-	-	-				-				0.251				-	-	-
Range	-	2-7	6.9-9.2				9.2-12.6				2.3-4.1				1.9-2.3	2.2-2.8	2.3-2.8
n	-	-	18				18				18				18	18	18
Mean	-	-	7.7				10.7				3.4				2.0	2.4	2.5
S.D.	-	-	0.52				0.72				0.31				0.10	0.15	0.13
C.V.	-	-	6.8%				6.7%				9.1%				5.0%	6.3%	5.2%

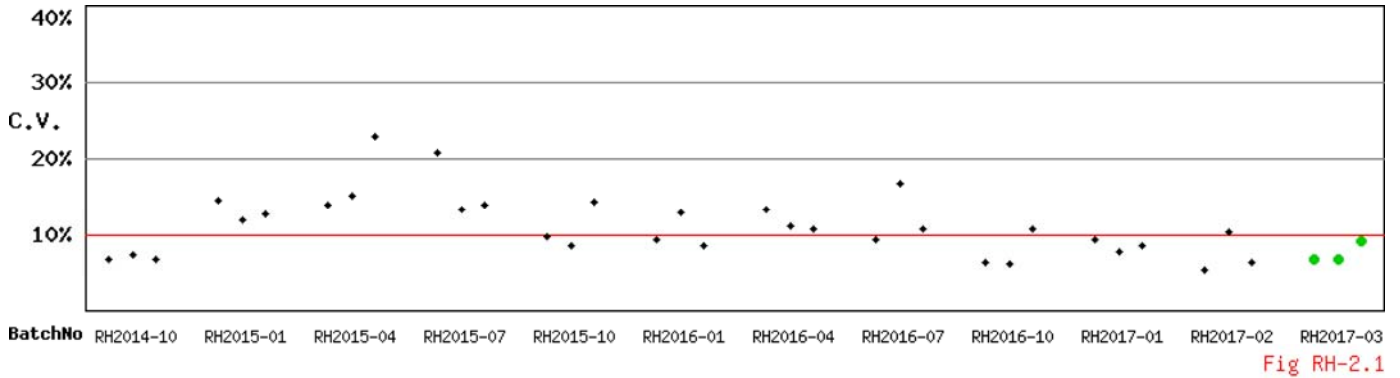
Note:

1.  $D\% = [(X - X_a) / X_a] \times 100\%$  ; X = Your Results , X<sub>a</sub> = Assigned value
2.  $u_{X_a}$  = uncertainty of the assigned value.  $u_{X_a} = 1.1 \times SD / n^{1/2}$
3. SD for proficiency assessment ( $\sigma_p$ ) = 7% x X<sub>a</sub> ; but while X<sub>a</sub> < 2.9 U/gHb,  $\sigma_p = 0.2$  U/gHb
4. Adjusted SD for proficiency assessment ( $\sigma_{p'}$ ) =  $(\sigma_p^2 + u_{X_a}^2)^{1/2}$ .  $\sigma_{p'}$  is used for proficiency assessment when  $u_{X_a} > 0.3\sigma_p$
5.  $z$  score =  $D / \sigma_p$  ; D = X - X<sub>a</sub>,  $\sigma_p$  = SD for proficiency assessment
6. SDI =  $(X - Mean) / SD$  ; SD = standard deviation of peer group ; SDI is not calculated when SD equals 0
7. The assigned value ( X<sub>a</sub> ) is the **median** of all the results reported of this EQA sample
8. Robust results ( Mean and SD ) were calculated by Algorithm A according to ISO 13528
9. The evaluation criteria for measurement result of each specimen : Acceptable :  $|z| \leq 2$ ; Caution :  $2 < |z| \leq 3$ ; Unsatisfactory :  $|z| > 3$
10. Maximum Allowable Deviation ( MAD ) =  $3 \times (\sigma_p / X_a) \times 100\%$  or  $3 \times (\sigma_{p'} / X_a) \times 100\%$  when  $u_{X_a} > 0.3\sigma_p$

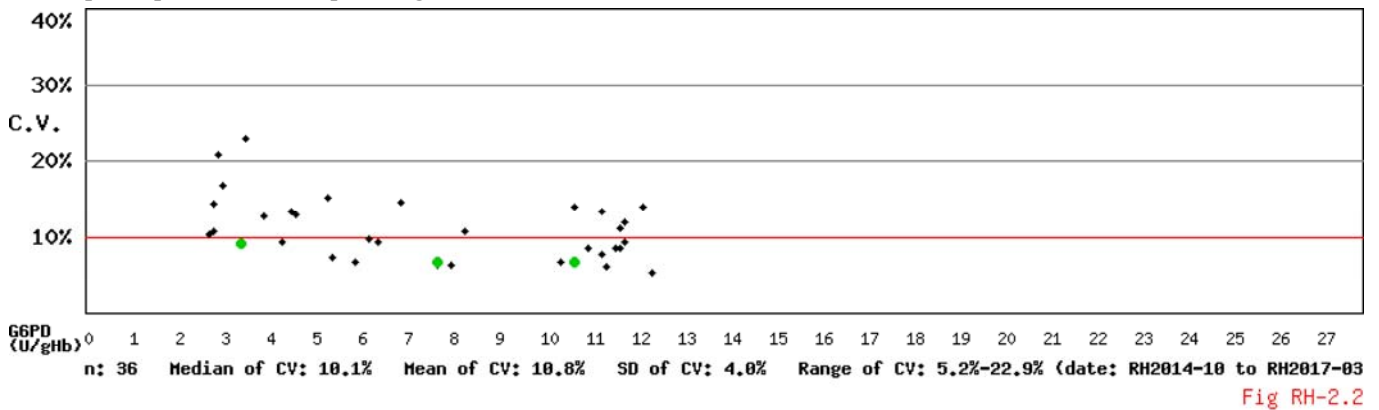
# Long Term Observation of Blood G6PD Quantitative Test EQA Survey Results

Survey No : RH2017-03 (in green ●)

- Total participants' CV result plotted against surveys



- Total participants' CV result plotted against G6PD activities



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

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(Report generated at 2017-07-11 18:29:19)

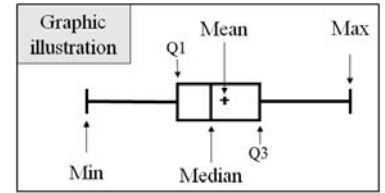
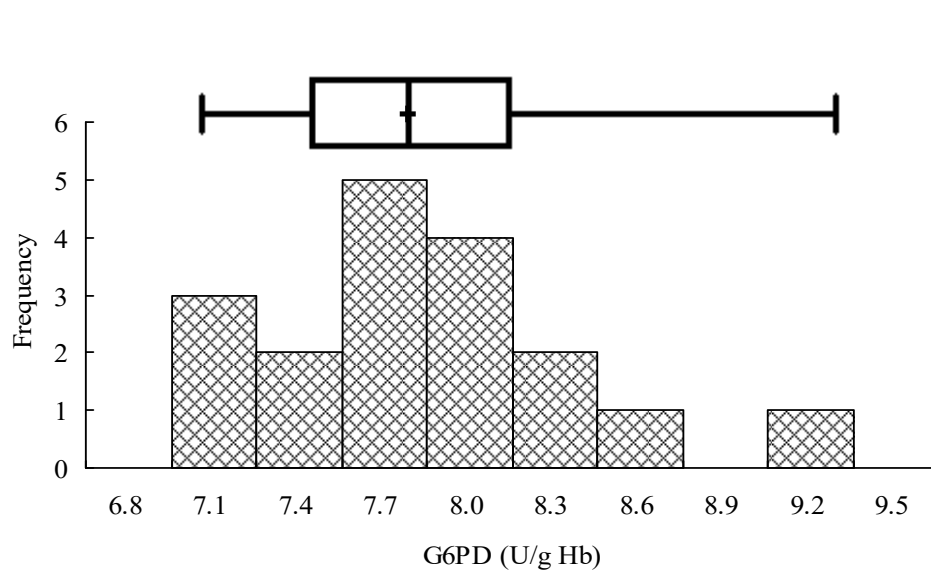
## RH2017-03 Distribution of G6PD Test Results

Survey No. : RH2017-03

Sample sent on : 2017/07/03

Reporting deadline : 2017/07/10

Results reported (%) : 100%



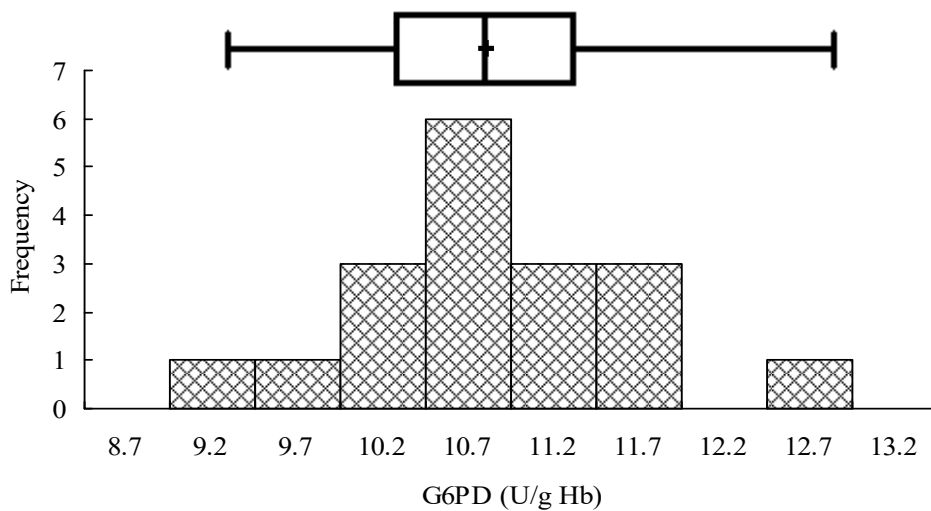
### Sample 1

**Median = 7.7 (n = 18)**

**Mean\* = 7.7 (n = 18)**

**SD\* = 0.52**

**CV = 6.8%**



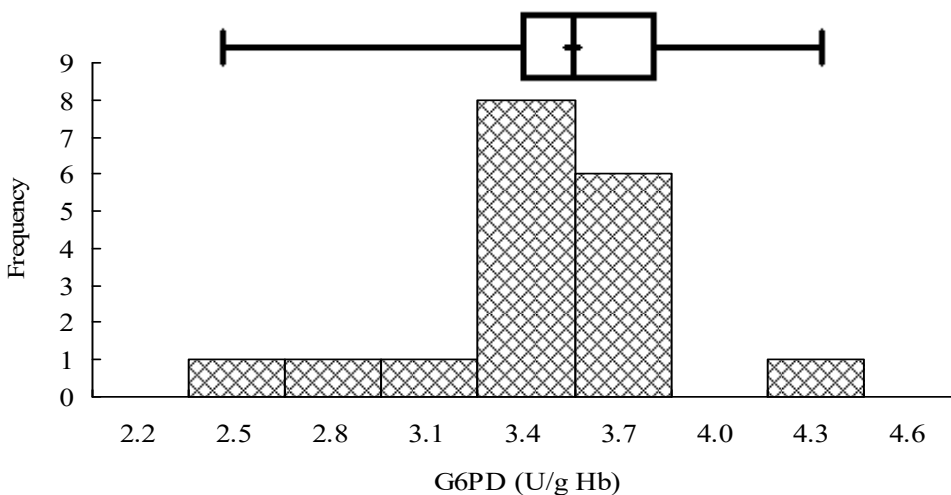
### Sample 2

**Median = 10.7 (n = 18)**

**Mean\* = 10.7 (n = 18)**

**SD\* = 0.72**

**CV = 6.7%**



### Sample 3

**Median = 3.4 (n = 18)**

**Mean\* = 3.4 (n = 18)**

**SD\* = 0.31**

**CV = 9.1%**

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

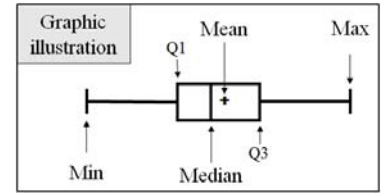
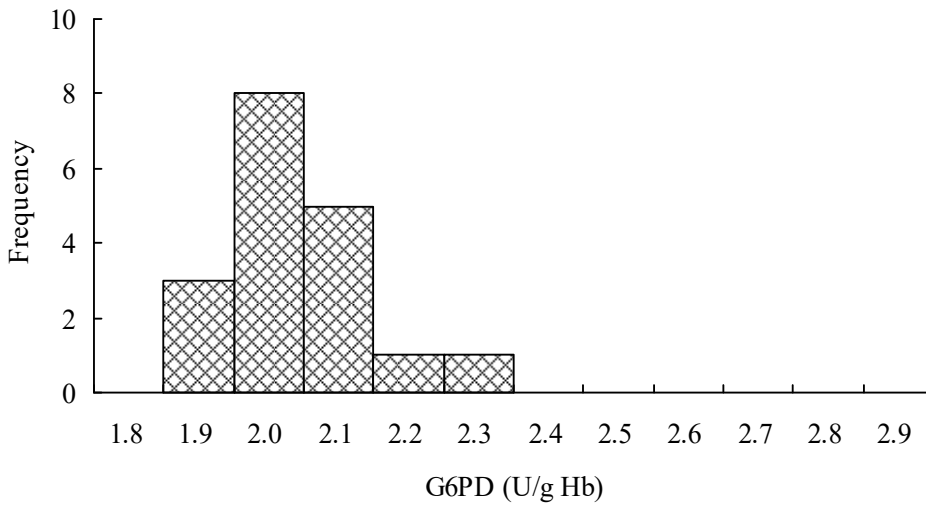
## RH2017-03 Distribution of Hb Test Results

Survey No. : RH2017-03

Sample sent on : 2017/07/03

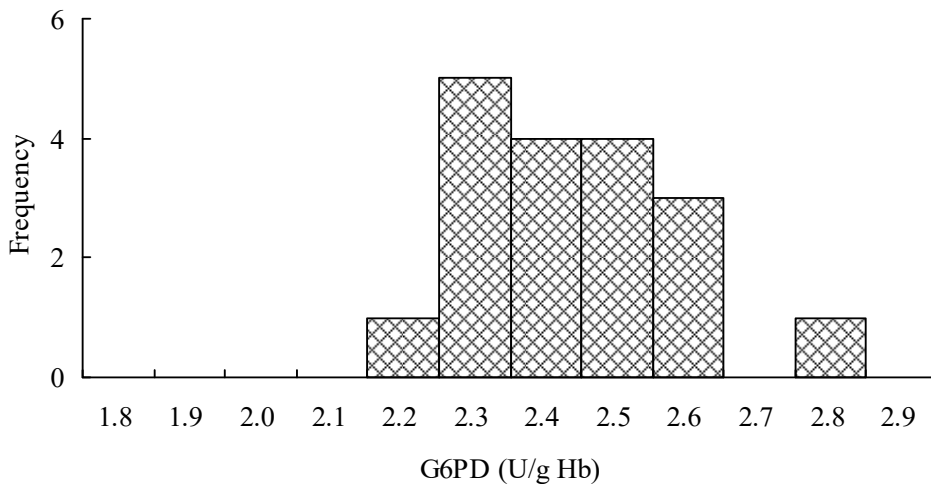
Reporting deadline : 2017/07/10

Results reported (%) : 100%



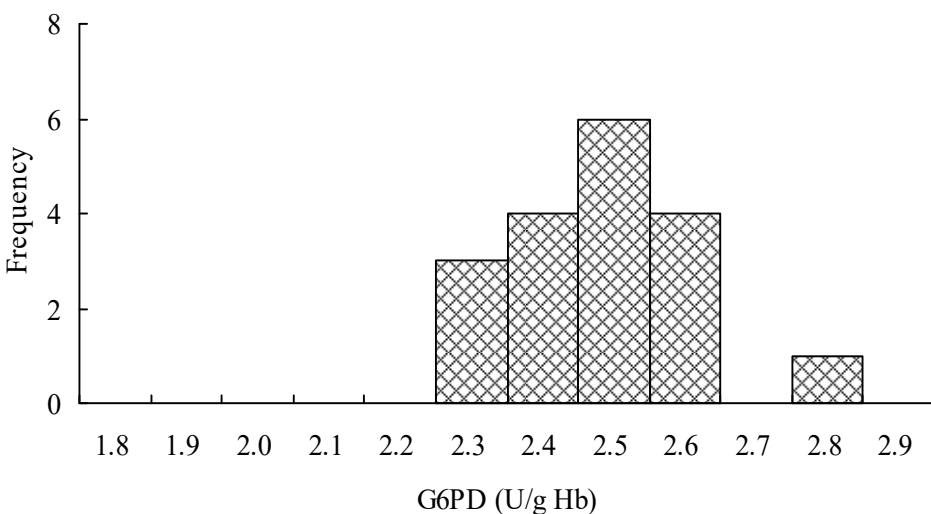
### Sample 1

**Median = 2.0 (n = 18)**  
**Mean\* = 2.0 (n = 18)**  
**SD\* = 0.10**  
**CV = 5.0%**



### Sample 2

**Median = 2.4 (n = 18)**  
**Mean\* = 2.4 (n = 18)**  
**SD\* = 0.15**  
**CV = 6.3%**



### Sample 3

**Median = 2.5 (n = 18)**  
**Mean\* = 2.5 (n = 18)**  
**SD\* = 0.13**  
**CV = 5.2%**

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

# External Quality Assurance (EQA) Program for G6PD Quantitative Test in Philippines

Survey No. : RH2017-03    Sample sent on : 2017 / 07 / 03

Reporting deadline : 2017 / 07 / 10

This Survey [S1](#) has been used in 2010-2017 ( n = 6 ; Survey / Sample No. ) :

[RH2010-03/S3](#) ; [RH2012-11/S1](#) ; [RH2013-07/S2](#) ; [RH2014-01/S1](#) ; [RH2016-07/S3](#) ; [RH2017-03/S1](#)

## Intermediate Measurement Precision of G6PD Quantitative Test

Lab	Survey : <a href="#">RH2017-03 / Sample 1</a>		Program period: <a href="#">2013 ~ 2017<sup>2</sup></a>			
	U/gHb	SDI <sup>1</sup>	Mean	n	SD	CV
F02	7.1	-0.8	8.4	6	1.48	17.8%
F03	8.1	-0.3	8.5	6	1.20	14.1%
F04	8.0	-0.2	8.0	6	0.28	3.5%
F05	8.5	0.5	8.2	5	0.61	7.4%
F07	6.9	-0.7	8.0	6	1.68	20.9%
F09	7.9	-0.1	8.0	5	1.28	15.9%
F10	7.6	-0.6	8.1	6	0.81	10.0%
F11	7.6	-0.1	7.6	5	0.76	9.9%
F13	8.2	—	—	4	—	—
F14	7.1	—	—	4	—	—
F17	9.2	—	—	2	—	—
F19	7.3	—	—	2	—	—
F20	7.6	—	—	2	—	—
F21	7.6	—	—	2	—	—
F22	8.0	—	—	2	—	—
F24	7.7	—	—	2	—	—
F25	7.9	—	—	2	—	—
F26	7.3	—	—	1	—	—
Median	7.7	-0.2	8.0	—	1.0	12.1%
Range	6.9 - 9.2	-0.8 - 0.5	7.6 - 8.5	—	0.3 - 1.7	3.5% - 20.9%

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

2). Survey / Sample No. : [RH2010-03/S3](#) ; [RH2012-11/S1](#) ; [RH2013-07/S2](#) ; [RH2014-01/S1](#) ; [RH2016-07/S3](#) ; [RH2017-03/S1](#)

\* Intermediate Measurement Precision ; ISO 3534-2:2006, JCGM 200:2012 ( VIM, 3rd ed. ) 2.23

\*\* Mean and SD are calculated by Robust method according to ISO 13528

\*\*\* n < 5, NOT calculated Mean and SD