

External Quality Assurance (EQA) of G6PD Quantitative Test

Survey No. : RH2017-02
 Sample sent : [24 set](#)

Sample sent on : 2017/04/17
 Results reported (%) : 24 (100%)

Reporting deadline : 2017/04/24

- 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	4	11.9	-5.6%	-0.8	-0.8	2.3	-17.9%	-2.4	-1.4	7.4	-5.1%	-0.7	-0.6	2.2	2.2	2.0
F03	F03	5	12.3	-2.4%	-0.3	-0.2	2.5	-10.7%	-1.4	-0.7	7.6	-2.6%	-0.4	-0.2	2.2	2.2	2.0
F04	F04	7	12.0	-4.8%	-0.7	-0.6	2.6	-7.1%	-1.0	-0.4	7.4	-5.1%	-0.7	-0.6	2.2	2.2	2.1
F05	F05	3	12.6	0.0%	0.0	0.3	2.9	3.6%	0.5	0.7	7.8	0.0%	0.0	0.2	2.2	2.2	2.1
F07	F07	7	12.7	0.8%	0.1	0.5	2.9	3.6%	0.5	0.7	7.6	-2.6%	-0.4	-0.2	2.3	2.3	2.2
F08	F08	6	12.1	-4.0%	-0.6	-0.5	2.8	0.0%	0.0	0.4	7.6	-2.6%	-0.4	-0.2	2.4	2.5	2.1
F09	F09	7	13.5	7.1%	1.0	1.7	2.7	-3.6%	-0.5	0.0	8.1	3.8%	0.5	0.8	2.2	2.1	1.9
F10	F10	7	12.6	0.0%	0.0	0.3	2.8	0.0%	0.0	0.4	7.8	0.0%	0.0	0.2	2.4	2.3	2.2
F11	F11	5	8.2	-34.9%	-5.0	-6.6	1.7	-39.3%	-5.2	-3.6	4.9	-37.2%	-5.3	-5.7	3.3	3.4	3.2
F12	F12	7	12.7	0.8%	0.1	0.5	2.8	0.0%	0.0	0.4	8.0	2.6%	0.4	0.6	2.4	2.3	2.2
F13	F13	7	16.7	32.5%	4.6	6.7	3.8	35.7%	4.8	3.9	10.7	37.2%	5.3	6.1	2.0	2.0	1.9
F14	F14	6	11.6	-7.9%	-1.1	-1.3	2.3	-17.9%	-2.4	-1.4	7.1	-9.0%	-1.3	-1.2	2.2	2.2	2.0
F15	F15	3	13.1	4.0%	0.6	1.1	2.9	3.6%	0.5	0.7	8.3	6.4%	0.9	1.2	2.3	2.3	2.2
F16	F16	7	13.2	4.8%	0.7	1.3	3.1	10.7%	1.4	1.4	8.9	14.1%	2.0	2.4	2.3	2.2	2.1
F17	F17	5	12.6	0.0%	0.0	0.3	2.8	0.0%	0.0	0.4	8.0	2.6%	0.4	0.6	2.3	2.2	2.1
F18	F18	5	12.8	1.6%	0.2	0.6	3.0	7.1%	1.0	1.1	8.0	2.6%	0.4	0.6	2.3	2.2	2.2
F19	F19	2	11.8	-6.3%	-0.9	-0.9	2.5	-10.7%	-1.4	-0.7	7.1	-9.0%	-1.3	-1.2	2.3	2.3	2.2
F20	F20	4	10.0	-20.6%	-2.9	-3.8	2.4	-14.3%	-1.9	-1.1	6.3	-19.2%	-2.7	-2.9	3.3	3.3	3.1
F21	F21	3	12.7	0.8%	0.1	0.5	2.6	-7.1%	-1.0	-0.4	8.0	2.6%	0.4	0.6	2.4	2.3	2.2
F22	F22	3	12.7	0.8%	0.1	0.5	2.8	0.0%	0.0	0.4	7.9	1.3%	0.2	0.4	2.2	2.1	2.1
F24	F24	7	12.9	2.4%	0.3	0.8	2.7	-3.6%	-0.5	0.0	8.0	2.6%	0.4	0.6	2.5	2.2	2.2
F25	F25	4	12.0	-4.8%	-0.7	-0.6	3.0	7.1%	1.0	1.1	7.4	-5.1%	-0.7	-0.6	2.2	2.2	2.2
F26	F26	3	12.4	-1.6%	-0.2	0.0	2.8	0.0%	0.0	0.4	7.9	1.3%	0.2	0.4	2.3	2.3	2.1
F27	F27	7	12.2	-3.2%	-0.5	-0.3	2.6	-7.1%	-1.0	-0.4	7.5	-3.8%	-0.5	-0.4	2.3	2.1	2.1
Total participating laboratories = 24																	
Xa (Median)	-	5	12.6				2.8				7.8				2.3	2.2	2.1
u _{Xa}	-	-	0.144				0.063				0.110				-	-	-
σ _p	-	-	0.882				-				0.546				-	-	-
σ _{p'}	-	-	-				0.210				-				-	-	-
Range	-	2-7	8.2-16.7				1.7-3.8				4.9-10.7				2.0-3.3	2.0-3.4	1.9-3.2
n	-	-	24				24				24				24	24	24
Mean	-	-	12.4				2.7				7.7				2.3	2.2	2.1
S.D.	-	-	0.64				0.28				0.49				0.12	0.10	0.11
C.V.	-	-	5.2%				10.4%				6.4%				5.2%	4.5%	5.2%

Note:

1. $D\% = [(X - X_a) / X_a] \times 100\%$; X = Your Results , X_a = Assigned value
2. $u_{Xa} =$ uncertainty of the assigned value. $u_{Xa} = 1.1 \times SD / n^{1/2}$
3. SD for proficiency assessment (σ_p) = 7% x X_a ; but while X_a < 2.9 U/gHb, $\sigma_p = 0.2$ U/gHb
4. Adjusted SD for proficiency assessment ($\sigma_{p'}$) = $(\sigma_p^2 + u_{Xa}^2)^{1/2}$. $\sigma_{p'}$ is used for proficiency assessment when $u_{Xa} > 0.3\sigma_p$
5. z score = D / σ_p ; D = X - X_a, σ_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_a) 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 $u_{Xa} > 0.3 \sigma_p$

Long Term Observation of Blood G6PD Quantitative Test EQA Survey Results

Survey No : RH2017-02 (in green ●)

- Total participants' CV result plotted against surveys

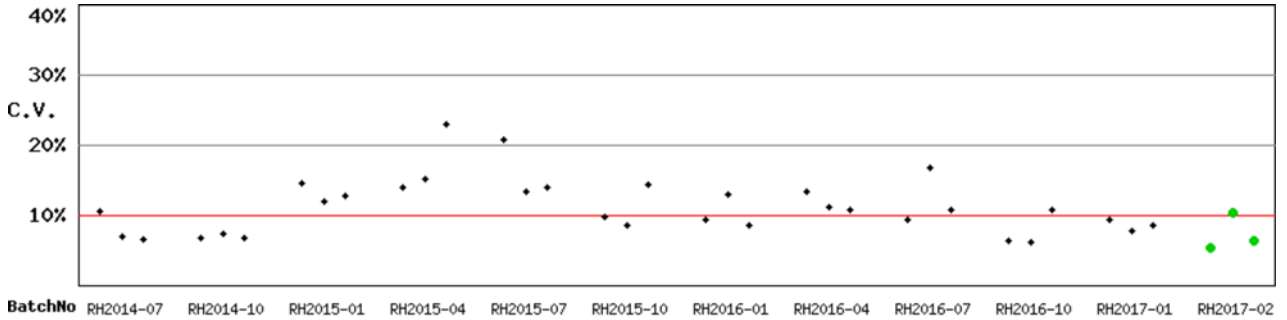


Fig RH-2.1

- Total participants' CV result plotted against G6PD activities

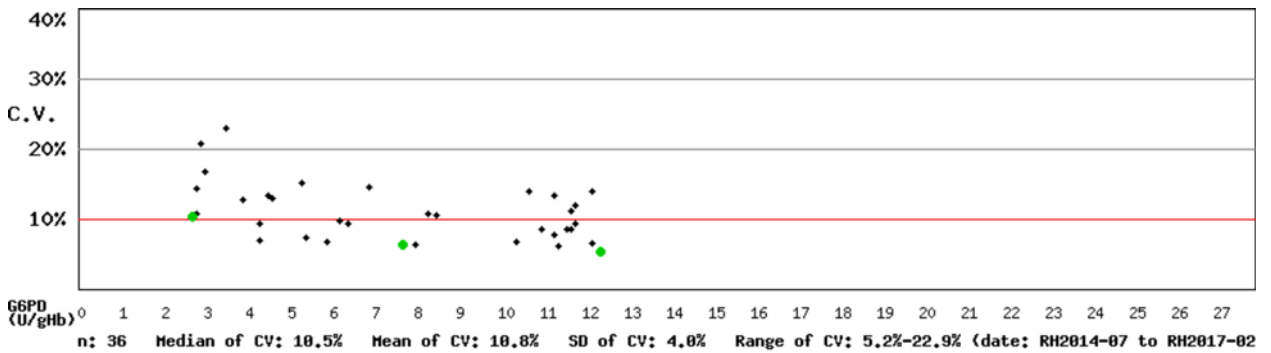


Fig RH-2.2

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

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(Report generated at 2017-04-26 10:58:20)

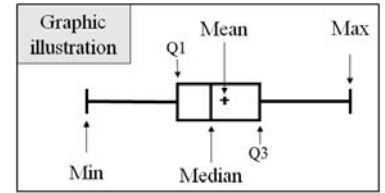
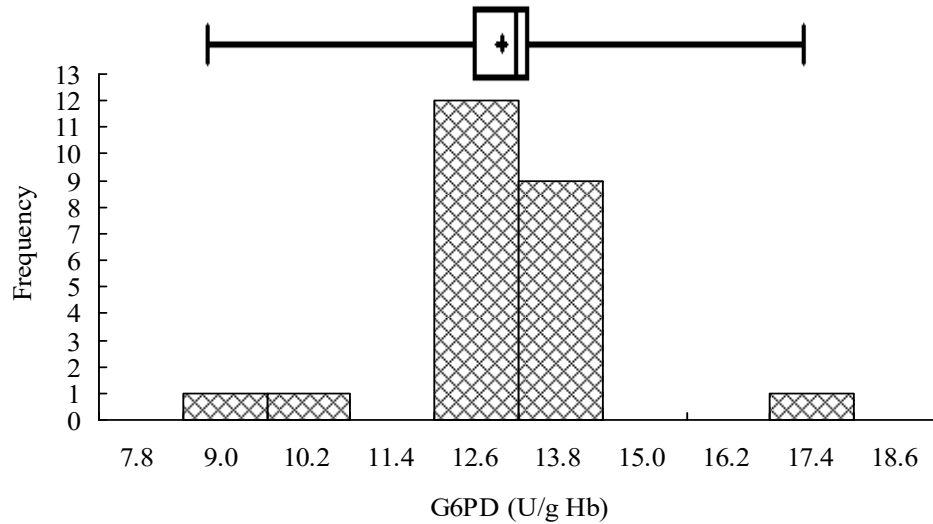
RH2017-02 Distribution of G6PD Test Results

Survey No. : RH2017-02

Sample sent on : 2017/04/17

Reporting deadline : 2017/04/24

Results reported (%) : 100%



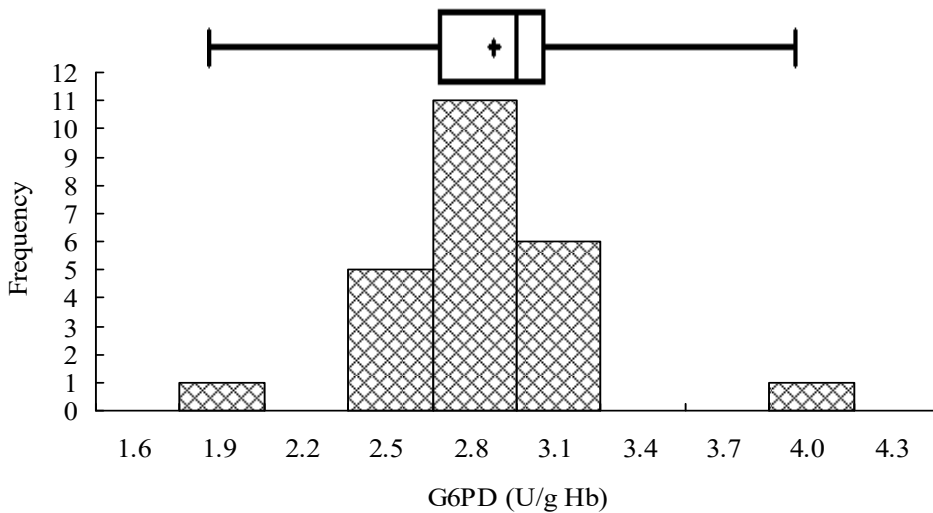
Sample 1

Median = 12.6 (n = 24)

Mean* = 12.4 (n = 24)

SD* = 0.64

CV = 5.2%



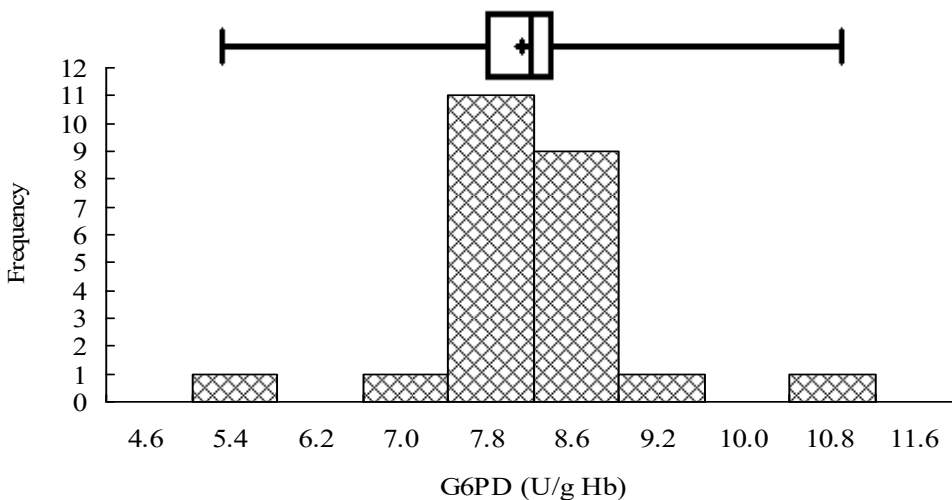
Sample 2

Median = 2.8 (n = 24)

Mean* = 2.7 (n = 24)

SD* = 0.28

CV = 10.4%



Sample 3

Median = 7.8 (n = 24)

Mean* = 7.7 (n = 24)

SD* = 0.49

CV = 6.4%

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

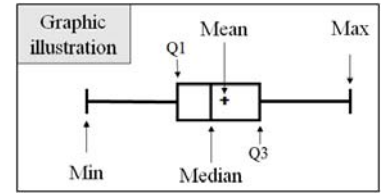
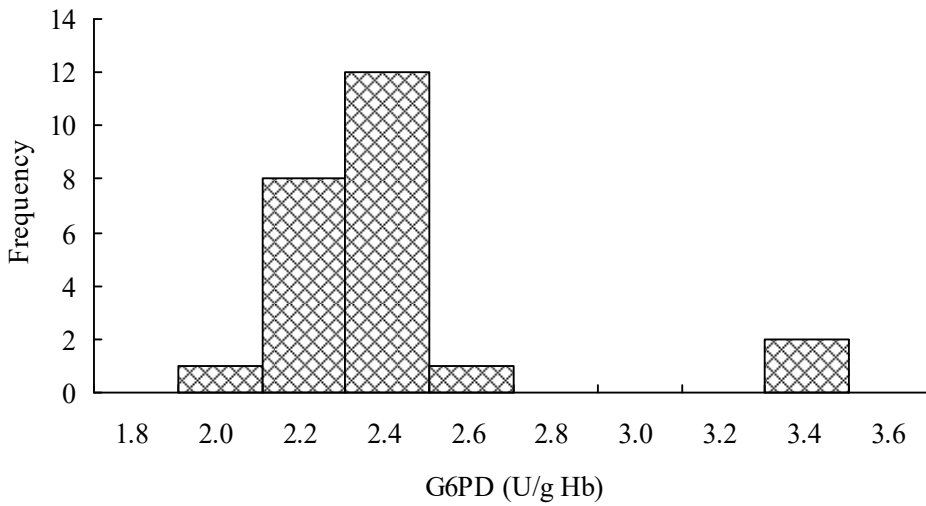
RH2017-02 Distribution of Hb Test Results

Survey No. : RH2017-02

Sample sent on : 2017/04/17

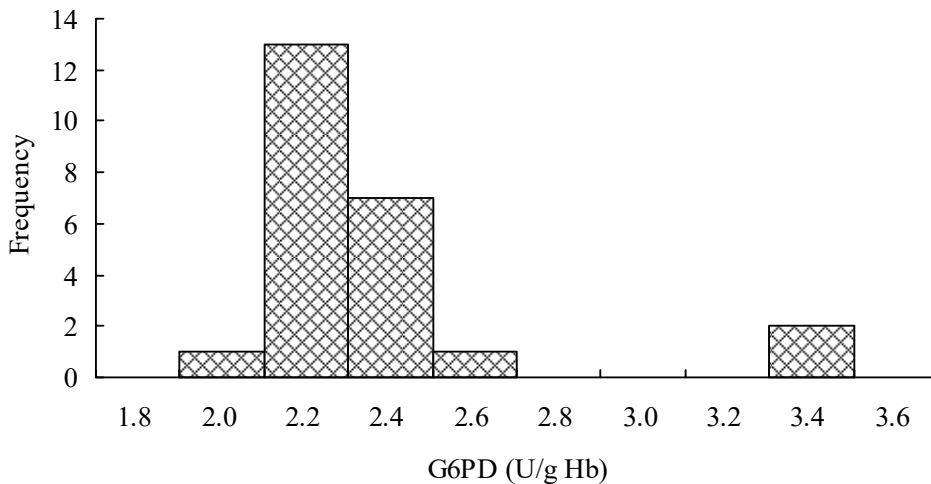
Reporting deadline : 2017/04/24

Results reported (%) : 100%



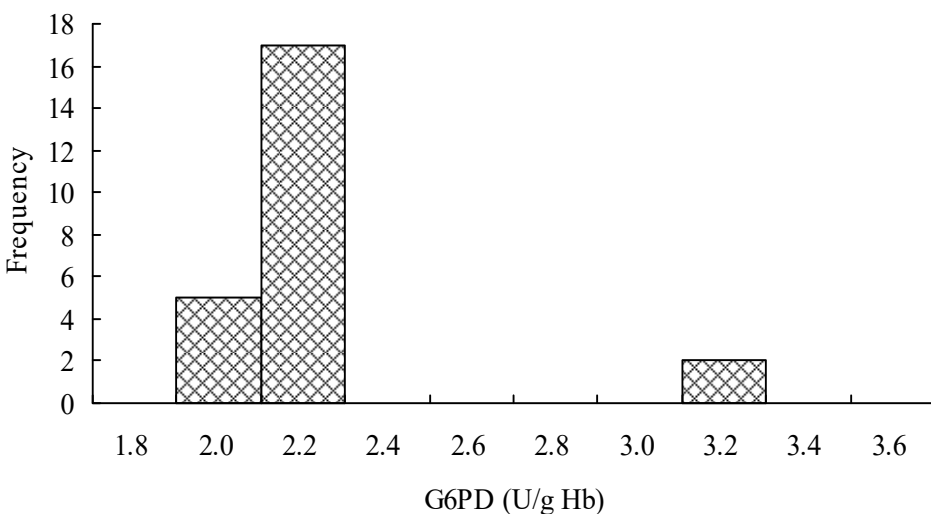
Sample 1

Median = 2.3 (n = 24)
Mean* = 2.3 (n = 24)
SD* = 0.12
CV = 5.2%



Sample 2

Median = 2.2 (n = 24)
Mean* = 2.2 (n = 24)
SD* = 0.10
CV = 4.5%



Sample 3

Median = 2.1 (n = 24)
Mean* = 2.1 (n = 24)
SD* = 0.11
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. : RH2017-02 Sample sent on : 2017 / 04 / 17

Reporting deadline : 2017 / 04 / 24

This Survey [S2](#) has been used in 2013-2017 (n = 5 ; Survey / Sample No.) :

[RH2013-05/S1](#) ; [RH2015-07/S1](#) ; [RH2016-07/S2](#) ; [RH2016-10/S3](#) ; [RH2017-02/S2](#)

Intermediate Measurement Precision of G6PD Quantitative Test

Lab	Survey : RH2017-02 / Sample 2		Program period: 2013 ~ 2017²			
	U/gHb	SDI ¹	Mean	n	SD	CV
F02	2.3	-1.1	2.8	5	0.46	16.4%
F03	2.5	-0.4	2.7	5	0.45	16.7%
F04	2.6	-0.4	2.8	5	0.46	16.4%
F05	2.9	-0.7	3.2	5	0.45	14.1%
F07	2.9	-0.2	3.1	5	1.02	32.9%
F08	2.8	-1.1	3.1	5	0.27	8.7%
F09	2.7	0.2	2.6	5	0.46	17.7%
F10	2.8	0.4	2.5	5	0.7	28.0%
F11	1.7	-1.5	2.9	5	0.81	27.9%
F12	2.8	-0.5	3.3	5	0.95	28.8%
F13	3.8	1.4	2.7	5	0.80	29.6%
F14	2.3	—	—	4	—	—
F15	2.9	—	—	4	—	—
F16	3.1	—	—	4	—	—
F17	2.8	—	—	4	—	—
F18	3.0	—	—	4	—	—
F19	2.5	—	—	4	—	—
F20	2.4	—	—	4	—	—
F21	2.6	—	—	4	—	—
F22	2.8	—	—	3	—	—
F24	2.7	—	—	3	—	—
F25	3.0	—	—	3	—	—
F26	2.8	—	—	2	—	—
F27	2.6	—	—	1	—	—
Total participating laboratories = 24						
Median	2.8	-0.4	2.8	—	0.5	17.7%
Range	1.7 ~ 3.8	-1.5 ~ 1.4	2.5 ~ 3.3	—	0.27 ~ 1.02	8.7% ~ 32.9%

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

2). Survey / Sample No. : [RH2013-05/S1](#) ; [RH2015-07/S2](#) ; [RH2016-07/S2](#) ; [RH2016-10/S3](#) ; [RH2017-02/S2](#)

* 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