

External Quality Assurance (EQA) of G6PD Quantitative Test

Survey No. : RH2018-03  
 Sample sent : [22 set](#)

Sample sent on : 2018/07/16  
 Results reported (%) : 22 (100%)

Reporting deadline : 2018/07/23

- 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)	G6PD Reagent Code	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	5	4.6	4.5%	0.6	1.0	11.3	2.7%	0.4	1.0	16.5	5.1%	0.7	1.2	2.3	1.7	2.0
F03	F03	7	5	4.4	0.0%	0.0	0.0	11.0	0.0%	0.0	0.2	15.7	0.0%	0.0	0.0	2.5	1.8	2.3
F04	F04	3	5	4.2	-4.5%	-0.6	-1.0	10.5	-4.5%	-0.6	-1.0	15.4	-1.9%	-0.3	-0.4	2.4	1.8	2.3
F05	F05	7	5	4.3	-2.3%	-0.3	-0.5	10.9	-0.9%	-0.1	0.0	14.8	-5.7%	-0.8	-1.3	2.4	1.8	2.3
F07	F07	7	5	4.6	4.5%	0.6	1.0	11.3	2.7%	0.4	1.0	16.2	3.2%	0.5	0.7	2.5	1.8	2.2
F09	F09	7	5	4.4	0.0%	0.0	0.0	11.1	0.9%	0.1	0.5	15.9	1.3%	0.2	0.3	2.6	1.9	2.5
F10	F10	4	5	4.5	2.3%	0.3	0.5	11.0	0.0%	0.0	0.2	15.8	0.6%	0.1	0.1	2.1	1.8	2.3
F11	F11	7	5	4.4	0.0%	0.0	0.0	11.1	0.9%	0.1	0.5	15.7	0.0%	0.0	0.0	2.4	1.7	2.0
F12	F12	4	5	4.6	4.5%	0.6	1.0	11.8	7.3%	1.0	2.1	16.7	6.4%	0.9	1.4	2.5	1.7	2.2
F13	F13	7	5	4.7	6.8%	1.0	1.4	11.3	2.7%	0.4	1.0	16.2	3.2%	0.5	0.7	2.7	2.0	2.5
F14	F14	7	5	4.2	-4.5%	-0.6	-1.0	11.1	0.9%	0.1	0.5	15.1	-3.8%	-0.5	-0.9	2.7	1.9	2.3
F15	F15	3	5	4.2	-4.5%	-0.6	-1.0	10.4	-5.5%	-0.8	-1.2	15.1	-3.8%	-0.5	-0.9	2.6	1.9	2.3
F17	F17	4	5	4.0	-9.1%	-1.3	-1.9	10.4	-5.5%	-0.8	-1.2	16.0	1.9%	0.3	0.4	2.5	1.9	2.3
F18	F18	3	5	4.5	2.3%	0.3	0.5	10.9	-0.9%	-0.1	0.0	15.7	0.0%	0.0	0.0	2.4	1.8	2.1
F19	F19	4	5	4.5	2.3%	0.3	0.5	11.0	0.0%	0.0	0.2	16.0	1.9%	0.3	0.4	2.4	2.0	2.1
F20	F20	8	5	4.3	-2.3%	-0.3	-0.5	10.9	-0.9%	-0.1	0.0	15.6	-0.6%	-0.1	-0.1	2.4	1.9	2.3
F21	F21	7	5	4.6	4.5%	0.6	1.0	11.3	2.7%	0.4	1.0	16.5	5.1%	0.7	1.2	2.4	1.8	2.1
F22	F22	4	5	3.6	-18.2%	-2.6	-3.8	9.1	-17.3%	-2.5	-4.3	12.1	-22.9%	-3.3	-5.2	2.6	2.2	2.6
F24	F24	4	5	4.5	2.3%	0.3	0.5	11.4	3.6%	0.5	1.2	16.1	2.5%	0.4	0.6	2.5	1.8	2.1
F25	F25	8	5	4.2	-4.5%	-0.6	-1.0	11.0	0.0%	0.0	0.2	15.1	-3.8%	-0.5	-0.9	2.7	1.9	2.4
F26	F26	4	5	4.3	-2.3%	-0.3	-0.5	10.1	-8.2%	-1.2	-1.9	14.4	-8.3%	-1.2	-1.9	2.4	1.8	2.2
F27	F27	3	5	4.2	-4.5%	-0.6	-1.0	10.7	-2.7%	-0.4	-0.5	15.1	-3.8%	-0.5	-0.9	2.5	1.9	2.2
Total participating laboratories = 22																		
Xa (Median)	-	5.5	-	4.4				11.0				15.7				2.5	1.8	2.3
u <sub>Xa</sub>	-	-	-	0.049				0.098				0.162				-	-	-
σ <sub>p</sub>	-	-	-	0.308				0.770				1.099				-	-	-
σ <sub>p</sub> '	-	-	-	-				-				-				-	-	-
Range	-	3-8	-	3.6-4.7				9.1-11.8				12.1-16.7				2.1-2.7	1.7-2.2	2.0-2.6
n	-	-	-	22				22				22				22	22	22
Mean	-	-	-	4.4				10.9				15.7				2.5	1.8	2.3
S.D.	-	-	-	0.21				0.42				0.69				0.13	0.10	0.17
C.V.	-	-	-	4.8%				3.9%				4.4%				5.2%	5.6%	7.4%

Note:

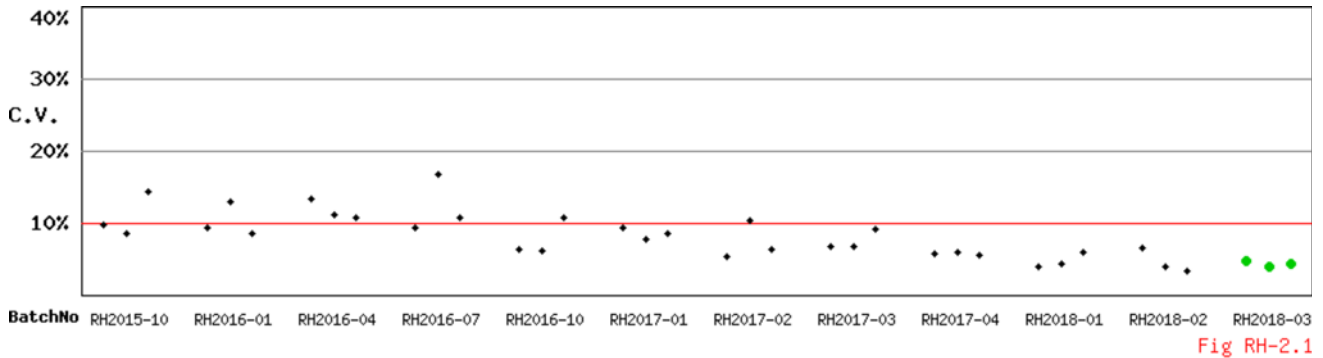
1.  $D\% = [(X - X_a) / X_a] \times 100\%$  ; X = Your Results , X<sub>a</sub> = Assigned value
2.  $u_{X_a}$  = uncertainty of the assigned value.  $u_{X_a} = 1.1 \times SD / n^{1/2}$
3. SD for proficiency assessment (  $\sigma_p$  ) = 7% x X<sub>a</sub> ; but while X<sub>a</sub> < 2.9 U/gHb,  $\sigma_p = 0.2$  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  $u_{X_a} \geq 0.3\sigma_p$
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  $u_{X_a} \geq 0.3\sigma_p$

Reagent Kit	G6PD Reagent Code	Lab
Medicon	5	F02, F03, F04, F05, F07, F09, F10, F11, F12, F13, F14, F15, F17, F18, F19, F20, F21, F22, F24, F25, F26, F27

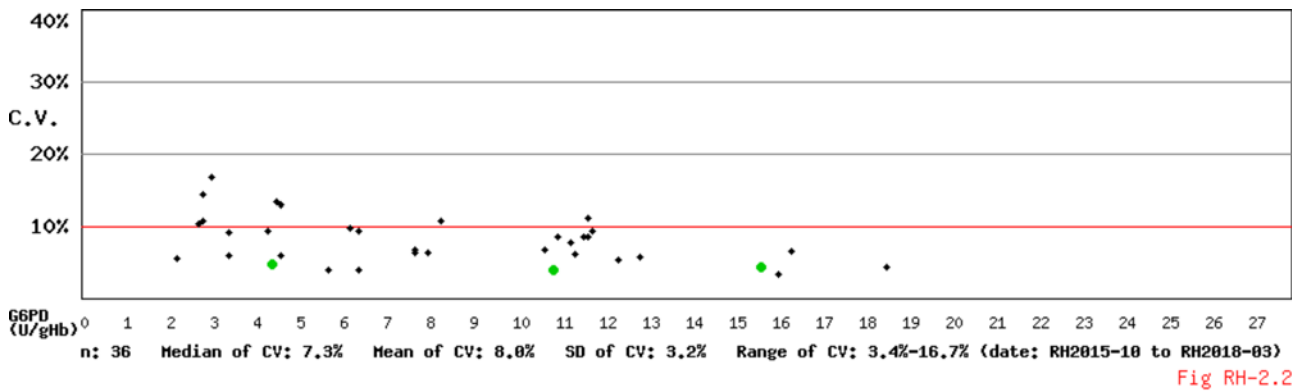
# Long Term Observation of Blood G6PD Quantitative Test EQA Survey Results

Survey No : RH2018-03 (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

Kwang-Jen Hsiao, Ph.D.  
 Preventive Medicine Foundation  
 P.O. Box 624  
 Taipei Xinwei, Taipei City 10699, Taiwan

Tel : +886-2-2703-6080  
 Fax : +886-2-2703-6070  
 E-mail : g6pd@g6pd.tw  
 URL : <http://eqa.g6pd.tw>

(Report generated at 2018-07-25 17:52:55)

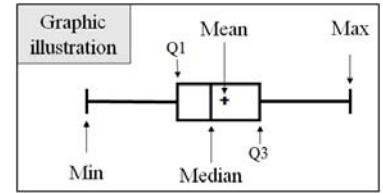
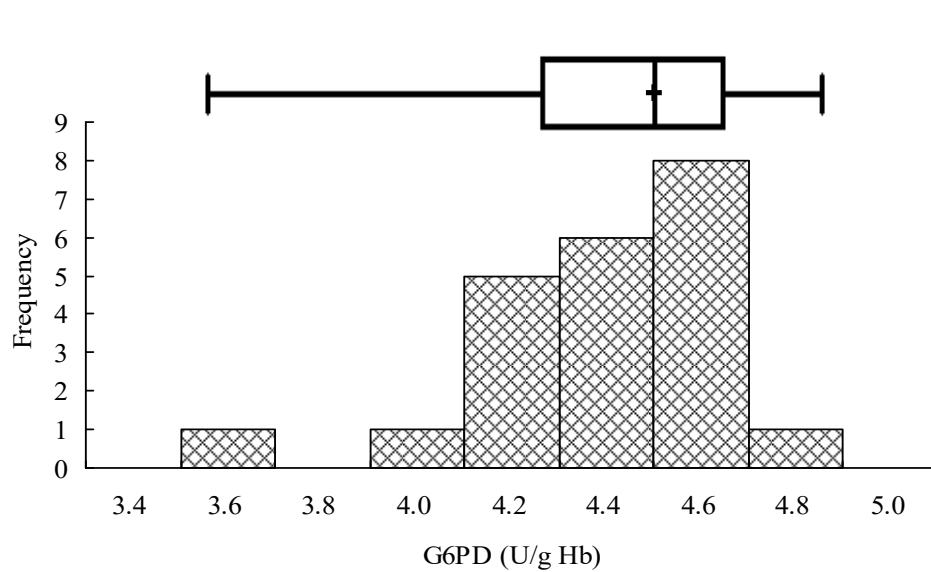
## RH2018-03 Distribution of G6PD Test Results

Survey No. : RH2018-03

Sample sent on : 2018/07/17

Reporting deadline : 2018/07/23

Results reported (%) : 95.5%



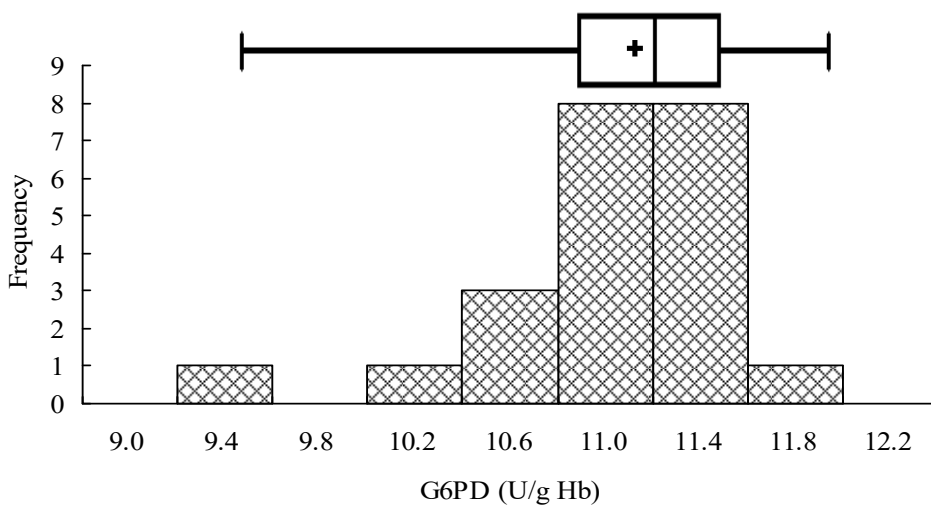
### Sample 1

**Median = 4.4 (n = 22)**

**Mean\* = 4.4 (n = 22)**

**SD\* = 0.21**

**CV = 4.8%**



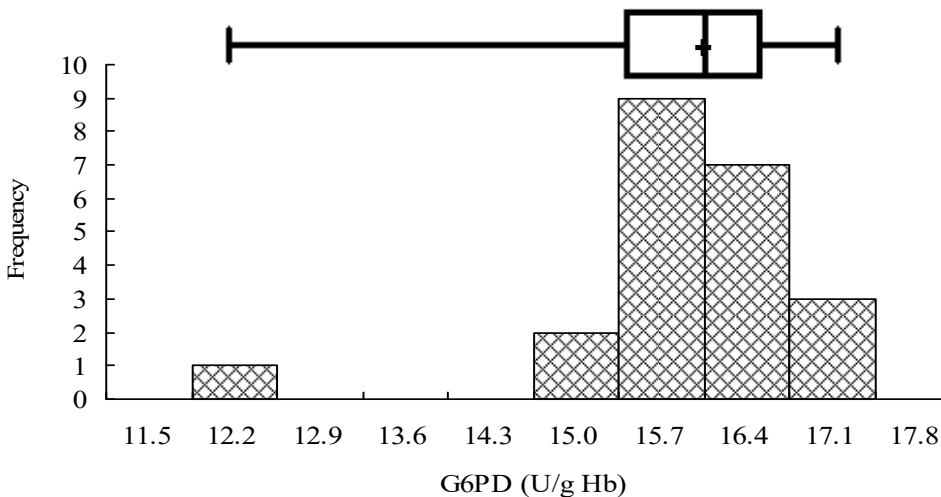
### Sample 2

**Median = 11.0 (n = 22)**

**Mean\* = 10.9 (n = 22)**

**SD\* = 0.42**

**CV = 3.9%**



### Sample 3

**Median = 15.7 (n = 22)**

**Mean\* = 15.7 (n = 22)**

**SD\* = 0.69**

**CV = 4.4%**

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

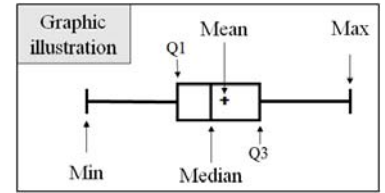
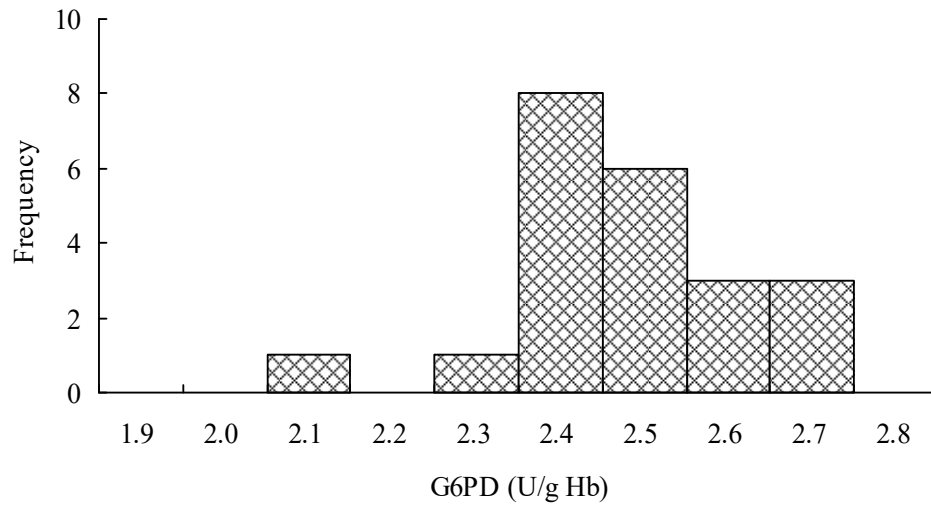
## RH2018-03 Distribution of Hb Test Results

Survey No. : RH2018-03

Sample sent on : 2018/07/17

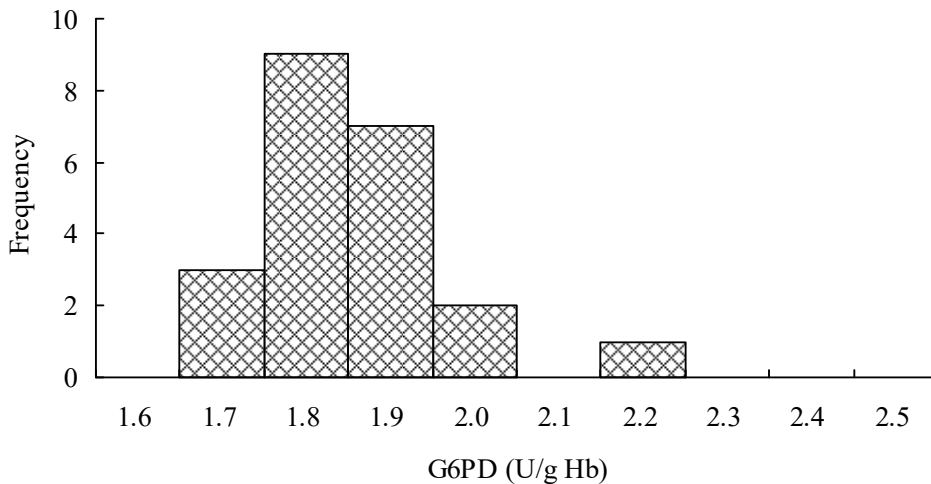
Reporting deadline : 2018/07/23

Results reported (%) : 95.5%



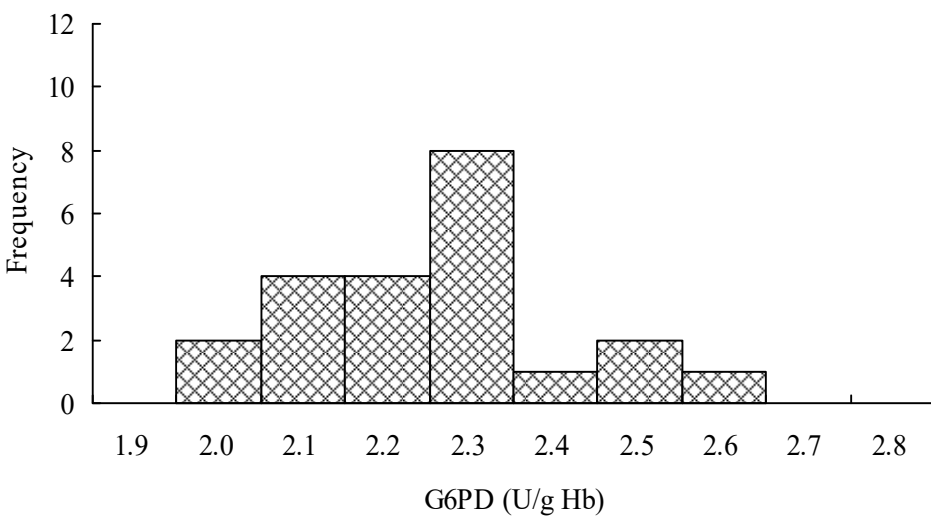
### Sample 1

**Median = 2.5 (n = 22)**  
**Mean\* = 2.5 (n = 22)**  
**SD\* = 0.13**  
**CV = 5.2%**



### Sample 2

**Median = 1.8 (n = 22)**  
**Mean\* = 1.8 (n = 22)**  
**SD\* = 0.10**  
**CV = 5.6%**



### Sample 3

**Median = 2.3. (n = 22)**  
**Mean\* = 2.3 (n = 22)**  
**SD\* = 0.17**  
**CV = 7.4%**

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