

External Quality Assurance (EQA) of G6PD Quantitative Test

Survey No. : RH2022-03

Sample sent on : 2022/09/12

Reporting deadline : 2022/09/19

Sample sent : [30 set](#)

Results reported (%) : 29 (97%)

1. [Long term observation of inter laboratory CV vs. surveys](#)

4. [The distribution of G6PD reported in this survey](#)

2. [Long term observation of inter laboratory CV vs. G6PD activities](#)

5. [The distribution of Hb reported in this survey](#)

3. [Deviation graph for individual laboratory](#)

6. [Others](#)

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/g Hb)	D%	z score	SDI	(U/g Hb)	D%	z score	SDI	(U/g Hb)	D%	z score	SDI			
F02	F02	2	5	6.3	1.6%	0.2	0.4	2.4	0.0%	0.0	0.0	15.6	6.1%	0.9	1.3	2.0	1.9	1.8
F03	F03	6	5	6.1	-1.6%	-0.2	-0.4	2.4	0.0%	0.0	0.0	14.6	-0.7%	-0.1	0.0	2.0	1.9	1.8
F04	F04	6	5	6.2	0.0%	0.0	0.0	2.9	20.8%	2.5	2.9	14.3	-2.7%	-0.4	-0.4	2.3	2.3	2.1
F05	F05	6	5	6.3	1.6%	0.2	0.4	2.5	4.2%	0.5	0.6	14.7	0.0%	0.0	0.1	2.0	2.0	1.9
F07	F07	4	5	6.4	3.2%	0.5	0.8	2.4	0.0%	0.0	0.0	15.2	3.4%	0.5	0.8	2.0	2.0	1.8
F09	F09	7	5	6.1	-1.6%	-0.2	-0.4	2.3	-4.2%	-0.5	-0.6	13.6	-7.5%	-1.1	-1.3	2.0	1.9	2.0
F10	F10	4	5	5.8	-6.5%	-0.9	-1.5	2.4	0.0%	0.0	0.0	13.5	-8.2%	-1.2	-1.4	2.0	1.9	1.8
F11	F11	7	5	6.3	1.6%	0.2	0.4	2.5	4.2%	0.5	0.6	14.7	0.0%	0.0	0.1	2.0	2.0	1.9
F12	F12	7	5	6.5	4.8%	0.7	1.2	2.5	4.2%	0.5	0.6	14.8	0.7%	0.1	0.3	2.0	2.0	1.9
F13	F13	4	5	6.0	-3.2%	-0.5	-0.8	2.1	-12.5%	-1.5	-1.8	13.5	-8.2%	-1.2	-1.4	1.9	2.0	1.8
F14	F14	6	5	6.2	0.0%	0.0	0.0	2.5	4.2%	0.5	0.6	14.1	-4.1%	-0.6	-0.7	1.9	1.8	1.9
F15	F15	4	5	6.3	1.6%	0.2	0.4	7.9	229.2%	27.5	32.4	13.4	-8.8%	-1.3	-1.6	2.0	2.0	2.1
F17	F17	4	5	5.9	-4.8%	-0.7	-1.2	2.1	-12.5%	-1.5	-1.8	15.4	4.8%	0.7	1.1	1.9	1.9	1.9
F18	F18	3	5	6.7	8.1%	1.2	1.9	2.8	16.7%	2.0	2.4	14.8	0.7%	0.1	0.3	2.0	2.0	1.9
F19	F19	4	5	6.4	3.2%	0.5	0.8	2.5	4.2%	0.5	0.6	15.1	2.7%	0.4	0.7	2.1	2.3	1.8
F20	F20	6	5	6.3	1.6%	0.2	0.4	2.2	-8.3%	-1.0	-1.2	14.5	-1.4%	-0.2	-0.1	2.0	2.0	1.9
F21	F21	7	5	6.2	0.0%	0.0	0.0	2.3	-4.2%	-0.5	-0.6	14.7	0.0%	0.0	0.1	2.0	1.8	1.6
F22	F22	4	5	5.9	-4.8%	-0.7	-1.2	2.4	0.0%	0.0	0.0	14.8	0.7%	0.1	0.3	1.9	1.8	1.7
F24	F24	4	5	6.0	-3.2%	-0.5	-0.8	2.2	-8.3%	-1.0	-1.2	14.3	-2.7%	-0.4	-0.4	2.0	1.9	1.9
F25	F25	4	5	6.1	-1.6%	-0.2	-0.4	2.3	-4.2%	-0.5	-0.6	13.7	-6.8%	-1.0	-1.2	2.0	1.9	1.9
F26	F26	5	5	5.9	-4.8%	-0.7	-1.2	2.3	-4.2%	-0.5	-0.6	13.7	-6.8%	-1.0	-1.2	2.0	2.0	1.9
F27	F27	7	5	6.5	4.8%	0.7	1.2	2.2	-8.3%	-1.0	-1.2	15.9	8.2%	1.2	1.7	1.9	1.9	1.7
F28	F28	7	5	6.6	6.5%	0.9	1.5	2.4	0.0%	0.0	0.0	14.7	0.0%	0.0	0.1	1.9	2.0	1.7
F29	F29	7	5	6.2	0.0%	0.0	0.0	2.5	4.2%	0.5	0.6	15.0	2.0%	0.3	0.5	2.1	2.1	1.7
F30	F30	6	5	6.3	1.6%	0.2	0.4	2.2	-8.3%	-1.0	-1.2	15.0	2.0%	0.3	0.5	1.9	1.9	1.8
F31	F31	3	5	6.2	0.0%	0.0	0.0	2.2	-8.3%	-1.0	-1.2	15.2	3.4%	0.5	0.8	1.9	1.9	1.8
F32	F32	4	5	6.1	-1.6%	-0.2	-0.4	2.3	-4.2%	-0.5	-0.6	14.3	-2.7%	-0.4	-0.4	2.0	1.9	1.8
F33	F33	4	5	6.9	11.3%	1.6	2.7	2.5	4.2%	0.5	0.6	15.9	8.2%	1.2	1.7	2.0	2.0	1.8
F34	F34	7	5	5.1	-17.7%	-2.5	-4.2	2.2	-8.3%	-1.0	-1.2	14.2	-3.4%	-0.5	-0.5	1.7	2.0	1.7
F35	None	N.R.	5	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.
Total participating laboratories = 30																		
Xa (Median)	-	5	-	6.2				2.4				14.7				2.0	2.0	1.8
u <sub>Xa</sub>	-	-	-	0.053				0.035				0.155				-	-	-
σ <sub>p</sub>	-	-	-	0.434				0.200				1.029				-	-	-
σ <sub>p</sub> '	-	-	-	-				-				-				-	-	-
Range	-	2-7	-	5.1-6.9				2.1-7.9				13.4-15.9				1.7-2.3	1.8-2.3	1.6-2.1
n	-	-	-	29				29				29				29	29	29
Mean	-	-	-	6.2				2.4				14.6				2.0	2.0	1.8
SD	-	-	-	0.26				0.17				0.76				0.00	0.08	0.11
CV	-	-	-	4.2%				7.1%				5.2%				0.0%	4.0%	6.1%

Note:

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

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, F28, F29, F30, F31, F32, F33, F34

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

Survey No : RH2022-03 (in green ●)

- Total participants' CV result plotted against surveys

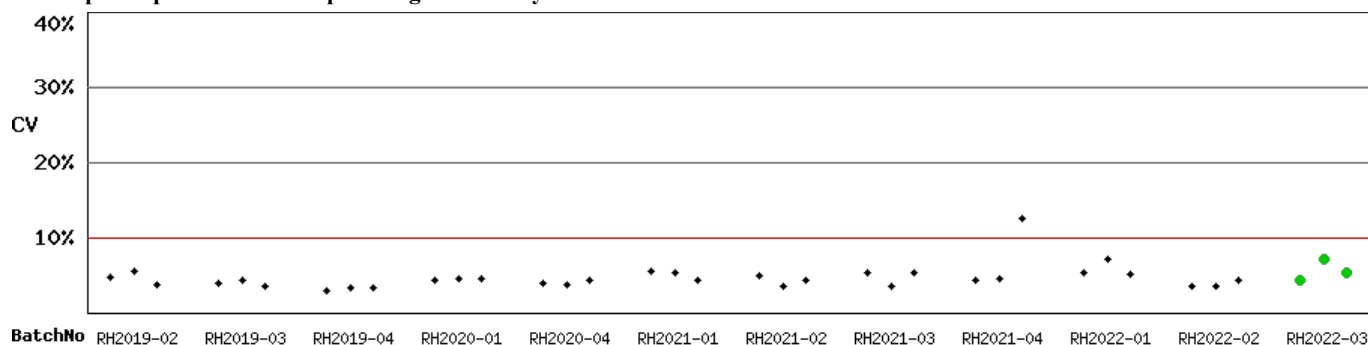


Fig RH-2.1

- Total participants' CV result plotted against G6PD activities

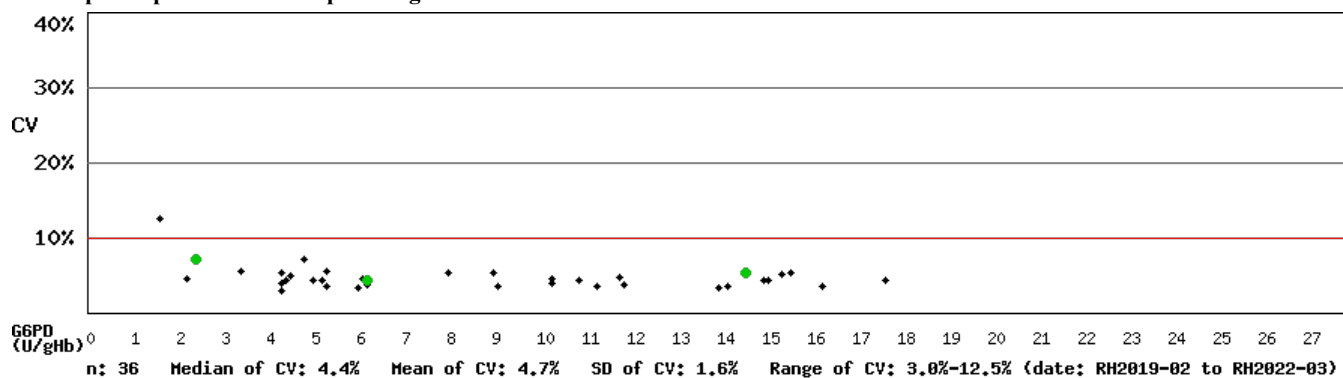


Fig RH-2.2

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

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(Report generated at 2022-09-20 17:09:21)

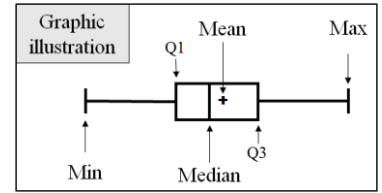
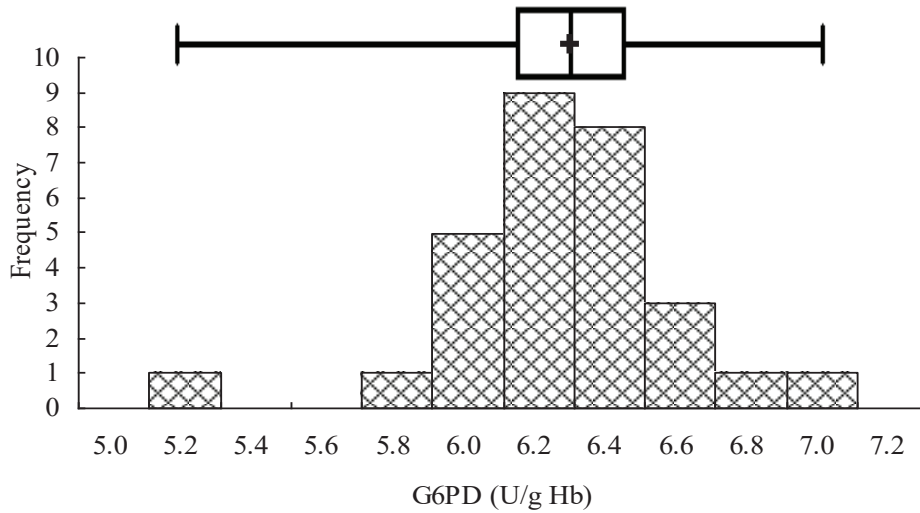
## RH2022-03 Distribution of G6PD Test Results

Survey No. : RH2022-03

Sample sent on : 2022/09/12

Reporting deadline : 2022/09/19

Results reported (%) : 96.7%



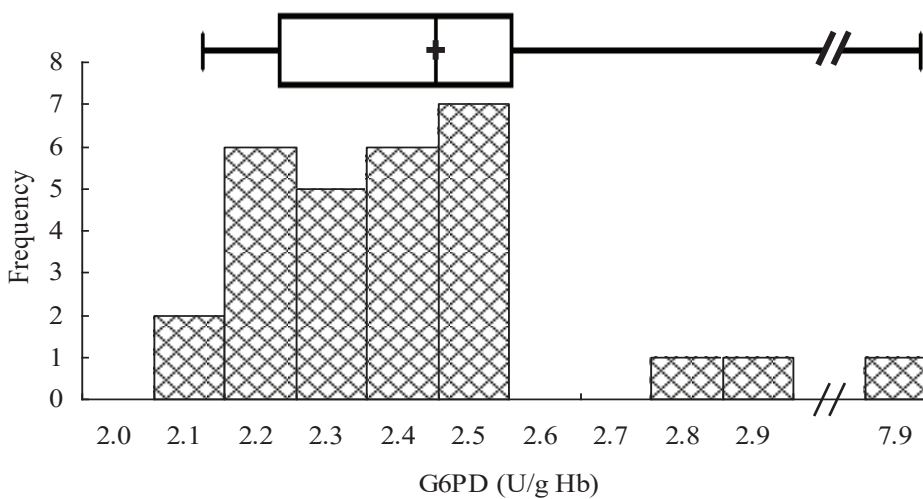
### Sample 1

**Median = 6.2 (n = 29)**

**Mean\* = 6.2 (n = 29)**

**SD\* = 0.26**

**CV = 4.2%**



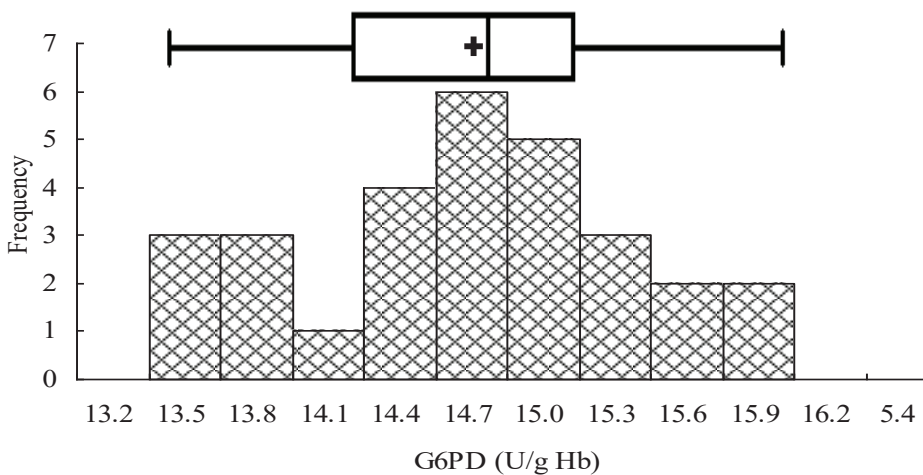
### Sample 2

**Median = 2.4 (n = 29)**

**Mean\* = 2.4 (n = 29)**

**SD\* = 0.17**

**CV = 7.1**



### Sample 3

**Median = 14.7 (n = 29)**

**Mean\* = 14.6 (n = 29)**

**SD\* = 0.76**

**CV = 5.2%**

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

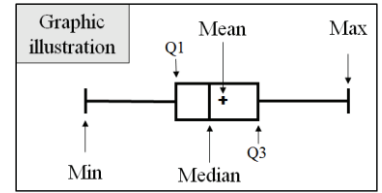
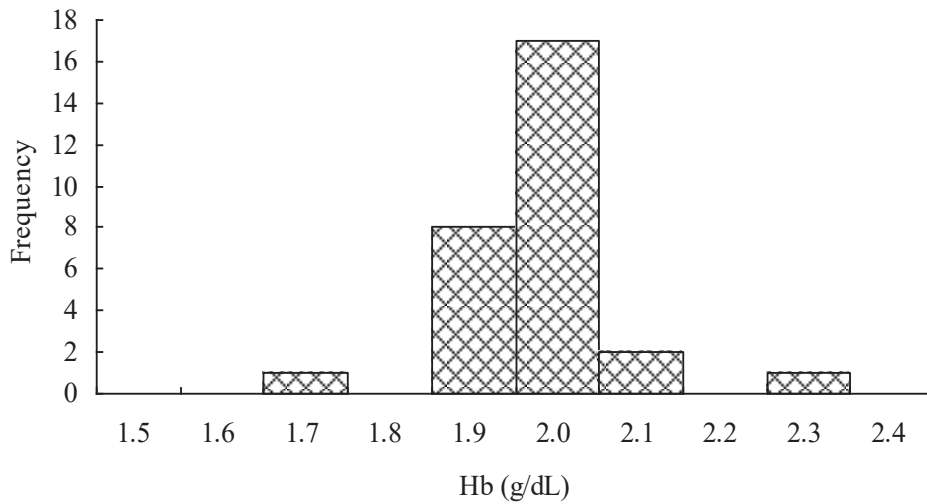
## RH2022-03 Distribution of Hb Test Results

Survey No. : RH2022-03

Sample sent on : 2022/09/12

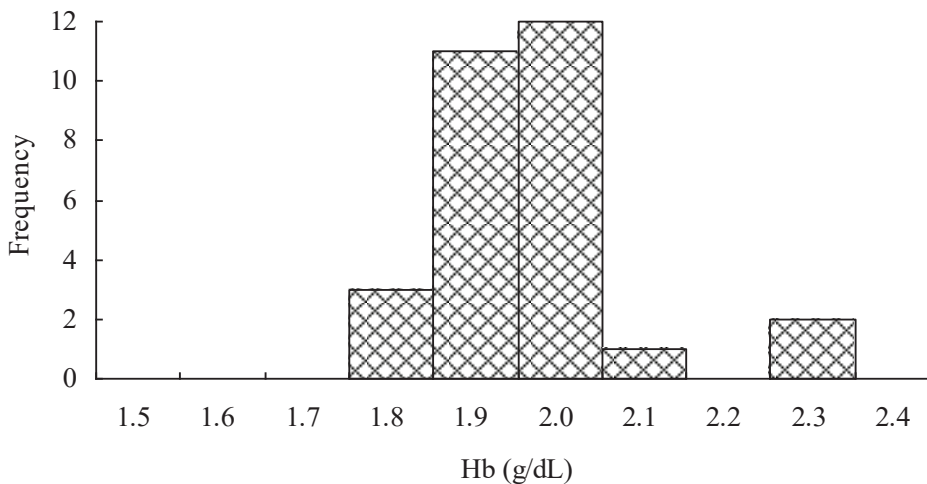
Reporting deadline : 2022/09/19

Results reported (%) : 96.7%



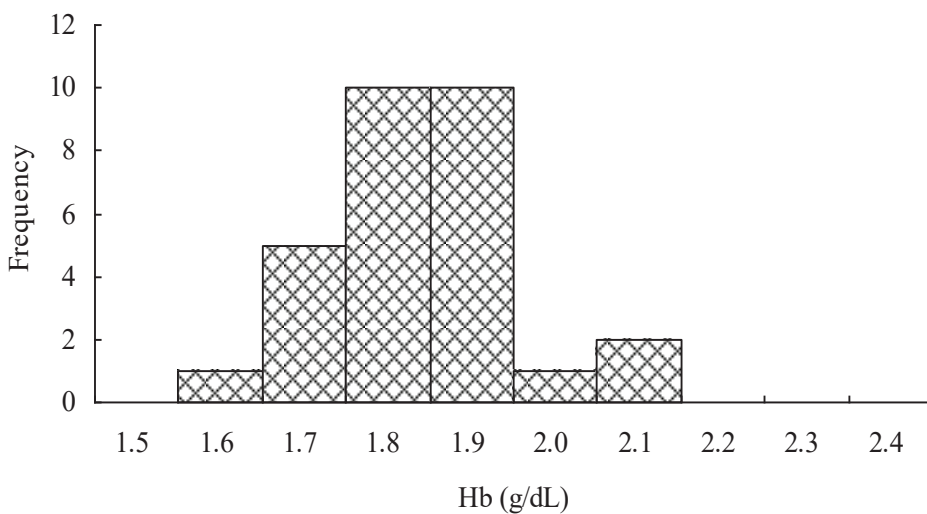
### Sample 1

**Median = 2.0 (n = 29)**  
**Mean\* = 2.0 (n = 29)**  
**SD\* = 0.00**  
**CV = 0.0%**



### Sample 2

**Median = 2.0 (n = 29)**  
**Mean\* = 2.0 (n = 29)**  
**SD\* = 0.08**  
**CV = 4.0%**



### Sample 3

**Median = 1.8 (n = 29)**  
**Mean\* = 1.8 (n = 29)**  
**SD\* = 0.11**  
**CV = 6.1%**

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