

External Quality Assurance (EQA) of G6PD Quantitative Test

Survey No. : RH2023-03
Sample sent : 31 set

Sample sent on : 2023/09/18
Results reported (%) : 31 (100%)

Reporting deadline : 2023/09/25

- 1. Long term observation of inter laboratory CV vs. surveys
- 2. Long term observation of inter laboratory CV vs. G6PD activities
- 3. Deviation graph for individual laboratory

- 4. The distribution of G6PD reported in this survey
- 5. The distribution of Hb reported in this survey
- 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	3	5	4.7	2.2%	0.3	0.0	16.8	2.4%	0.3	0.5	11.4	0.9%	0.1	0.2	2.0	1.9	1.7
F03	F03	7	5	4.8	4.3%	0.6	0.6	16.8	2.4%	0.3	0.5	11.8	4.4%	0.6	0.8	2.0	2.0	1.8
F04	F04	6	5	4.6	0.0%	0.0	-0.6	16.2	-1.2%	-0.2	-0.2	11.3	0.0%	0.0	0.0	2.1	2.1	1.9
F05	F05	6	5	4.6	0.0%	0.0	-0.6	16.2	-1.2%	-0.2	-0.2	11.2	-0.9%	-0.1	-0.2	2.1	2.1	1.9
F07	F07	7	5	4.7	2.2%	0.3	0.0	16.7	1.8%	0.3	0.3	11.6	2.7%	0.4	0.5	2.2	2.1	1.9
F09	F09	7	5	4.6	0.0%	0.0	-0.6	15.0	-8.5%	-1.2	-1.6	10.6	-6.2%	-0.9	-1.2	2.2	2.2	2.0
F10	F10	8	5	4.2	-8.7%	-1.2	-3.1	13.7	-16.5%	-2.4	-3.1	10.0	-11.5%	-1.6	-2.2	2.1	2.1	1.8
F11	F11	7	5	4.8	4.3%	0.6	0.6	17.5	6.7%	1.0	1.3	11.4	0.9%	0.1	0.2	1.9	2.0	1.8
F12	F12	7	5	4.9	6.5%	0.9	1.3	17.6	7.3%	1.0	1.4	12.1	7.1%	1.0	1.4	2.1	1.9	1.8
F13	F13	4	5	4.1	-10.9%	-1.6	-3.8	15.7	-4.3%	-0.6	-0.8	10.2	-9.7%	-1.4	-1.9	1.9	1.8	1.6
F14	F14	7	5	4.9	6.5%	0.9	1.3	17.1	4.3%	0.6	0.8	11.9	5.3%	0.8	1.0	2.1	2.0	1.8
F15	F15	7	5	4.6	0.0%	0.0	-0.6	16.1	-1.8%	-0.3	-0.3	11.3	0.0%	0.0	0.0	2.0	1.9	1.8
F17	F17	4	5	4.6	0.0%	0.0	-0.6	16.5	0.6%	0.1	0.1	11.1	-1.8%	-0.3	-0.3	2.0	2.0	1.8
F18	F18	3	5	4.6	0.0%	0.0	-0.6	16.4	0.0%	0.0	0.0	11.1	-1.8%	-0.3	-0.3	2.1	2.0	1.8
F19	F19	7	5	5.0	8.7%	1.2	1.9	17.7	7.9%	1.1	1.5	12.3	8.8%	1.3	1.7	2.1	1.9	1.8
F20	F20	7	5	4.6	0.0%	0.0	-0.6	15.9	-3.0%	-0.4	-0.6	11.6	2.7%	0.4	0.5	1.9	2.1	2.0
F21	F21	7	5	4.6	0.0%	0.0	-0.6	16.2	-1.2%	-0.2	-0.2	11.1	-1.8%	-0.3	-0.3	2.0	1.9	1.9
F22	F22	2	5	4.8	4.3%	0.6	0.6	16.4	0.0%	0.0	0.0	11.5	1.8%	0.3	0.3	2.0	1.9	1.7
F24	F24	4	5	4.3	-6.5%	-0.9	-2.5	13.6	-17.1%	-2.4	-3.2	10.2	-9.7%	-1.4	-1.9	2.3	2.4	2.1
F25	F25	4	5	4.8	4.3%	0.6	0.6	16.6	1.2%	0.2	0.2	11.8	4.4%	0.6	0.8	2.0	2.0	1.7
F26	F26	7	5	4.6	0.0%	0.0	-0.6	15.6	-4.9%	-0.7	-0.9	11.0	-2.7%	-0.4	-0.5	2.2	2.2	1.9
F27	F27	7	5	4.7	2.2%	0.3	0.0	16.1	-1.8%	-0.3	-0.3	11.4	0.9%	0.1	0.2	2.1	1.9	1.8
F28	F28	2	5	4.6	0.0%	0.0	-0.6	16.5	0.6%	0.1	0.1	11.2	-0.9%	-0.1	-0.2	2.1	2.0	1.8
F29	F29	7	5	4.7	2.2%	0.3	0.0	16.9	3.0%	0.4	0.6	11.3	0.0%	0.0	0.0	2.0	1.9	1.8
F30	F30	4	5	4.6	0.0%	0.0	-0.6	16.0	-2.4%	-0.3	-0.5	10.9	-3.5%	-0.5	-0.7	1.9	1.8	1.6
F31	F31	3	5	4.7	2.2%	0.3	0.0	16.2	-1.2%	-0.2	-0.2	11.0	-2.7%	-0.4	-0.5	2.1	2.0	1.8
F32	F32	4	5	4.6	0.0%	0.0	-0.6	15.7	-4.3%	-0.6	-0.8	11.1	-1.8%	-0.3	-0.3	2.0	2.1	2.0
F33	F33	2	5	4.7	2.2%	0.3	0.0	17.5	6.7%	1.0	1.3	12.2	8.0%	1.1	1.5	2.0	2.0	1.8
F34	F34	7	5	3.7	-19.6%	-2.8	-6.3	14.6	-11.0%	-1.6	-2.0	9.0	-20.4%	-2.9	-3.9	2.0	1.6	2.0
F35	F35	4	5	5.0	8.7%	1.2	1.9	17.7	7.9%	1.1	1.5	12.0	6.2%	0.9	1.2	2.1	2.0	1.8
F36	F36	2	5	4.7	2.2%	0.3	0.0	16.5	0.6%	0.1	0.1	11.8	4.4%	0.6	0.8	2.1	2.0	1.8
Total participating laboratories = 31																		
Xa (Median)	-	6	-	4.6				16.4				11.3				2.1	2.0	1.8
u _{Xa}	-	-	-	0.032				0.174				0.117				-	-	-
σ _p	-	-	-	0.322				1.148				0.791				-	-	-
σ _p '	-	-	-	-				-				-				-	-	-
Range	-	2-8	-	3.7-5.0				13.6-17.7				9.0-12.3				1.9-2.3	1.6-2.4	1.6-2.1
n	-	-	-	31				31				31				31	31	31
Mean	-	-	-	4.7				16.4				11.3				2.1	2.0	1.8
SD	-	-	-	0.16				0.88				0.59				0.10	0.12	0.00
CV	-	-	-	3.4%				5.4%				5.2%				4.8%	6.0%	0.0%

Note:

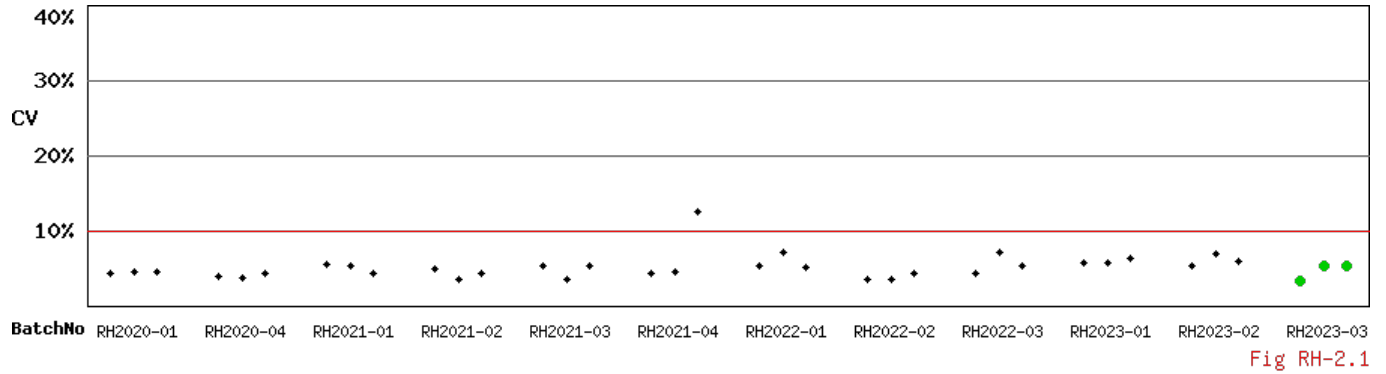
1. $D\% = [(X - X_a) / X_a] \times 100\%$; X = Your Results, X_a = Assigned value
2. u_{X_a} = uncertainty of the assigned value. $u_{X_a} = 1.1 \times SD / n^{1/2}$
3. SD for proficiency assessment (σ_p) = 7% x X_a; but while X_a < 2.9 U/g Hb, $\sigma_p = 0.2$ U/g Hb
4. Adjusted SD for proficiency assessment (σ_p') = $(\sigma_p^2 + u_{X_a}^2)^{1/2}$. σ_p' is used for proficiency assessment when $u_{X_a} \geq 0.3\sigma_p$
5. z score = D / σ_p ; D = X - X_a, σ_p = SD for proficiency assessment. When adjusted SD (σ_p') is used for proficiency assessment, z score = D / σ_p'
6. SDI = $(X - \text{Mean}) / SD$; 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 : $2 < |z| < 3$; Unsatisfactory : $|z| \geq 3$

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, F35, F36

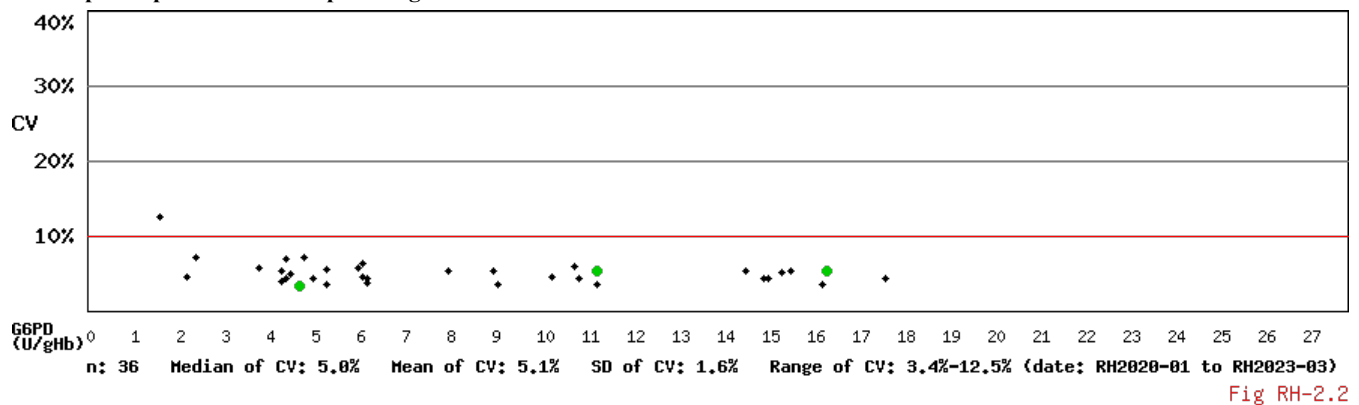
Long Term Observation of Blood G6PD Quantitative Test EQA Survey Results

Survey No : RH2023-03 (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 2023-09-27 09:47:21)

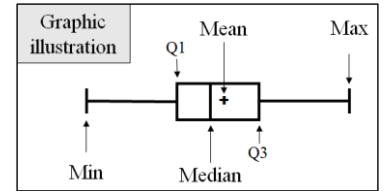
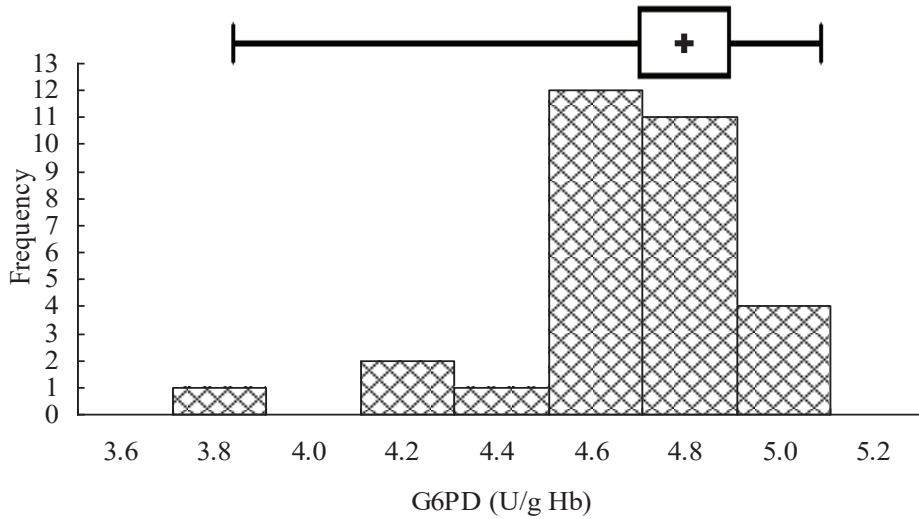
RH2023-03 Distribution of G6PD Test Results

Survey No. : RH2023-03

Sample sent on : 2023/09/18

Reporting deadline : 2023/09/25

Results reported (%) : 100%



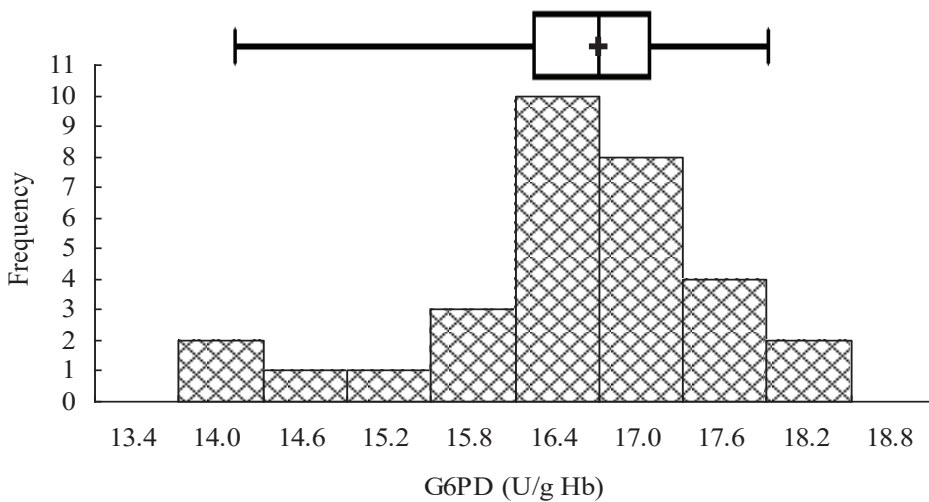
Sample 1

Median = 4.6 (n = 31)

Mean* = 4.7 (n = 31)

SD* = 0.16

CV = 3.4%



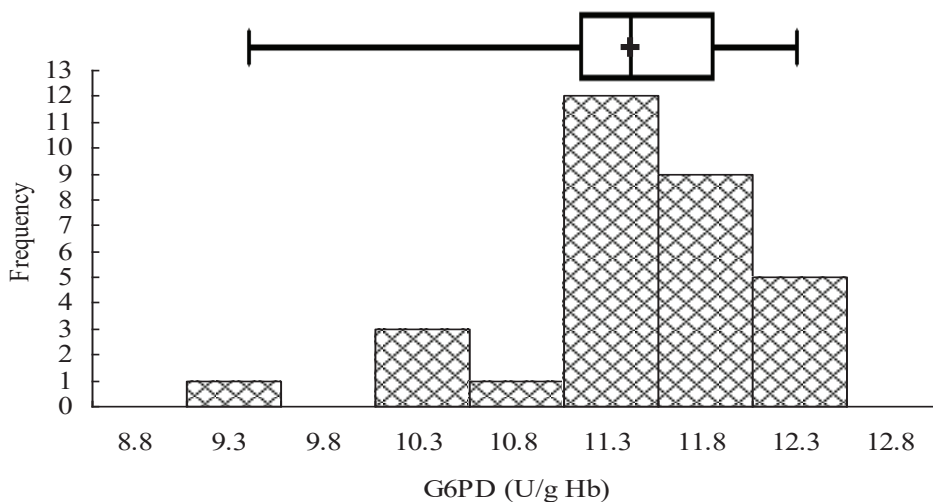
Sample 2

Median = 16.4 (n = 31)

Mean* = 16.4 (n = 31)

SD* = 0.88

CV = 5.4%



Sample 3

Median = 11.3 (n = 31)

Mean* = 11.3 (n = 31)

SD* = 0.59

CV = 5.2%

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

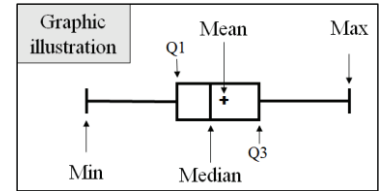
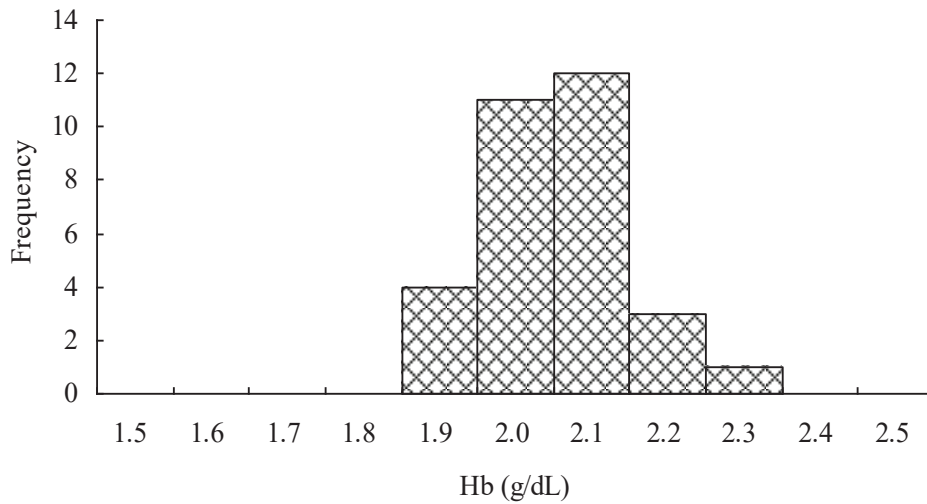
RH2023-03 Distribution of Hb Test Results

Survey No. : RH2023-03

Sample sent on : 2023/09/18

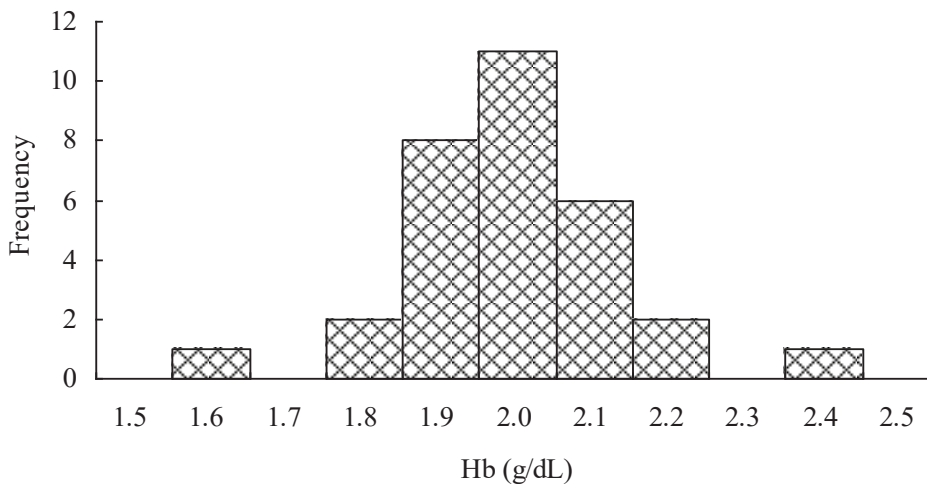
Reporting deadline : 2023/09/25

Results reported (%) : 100%



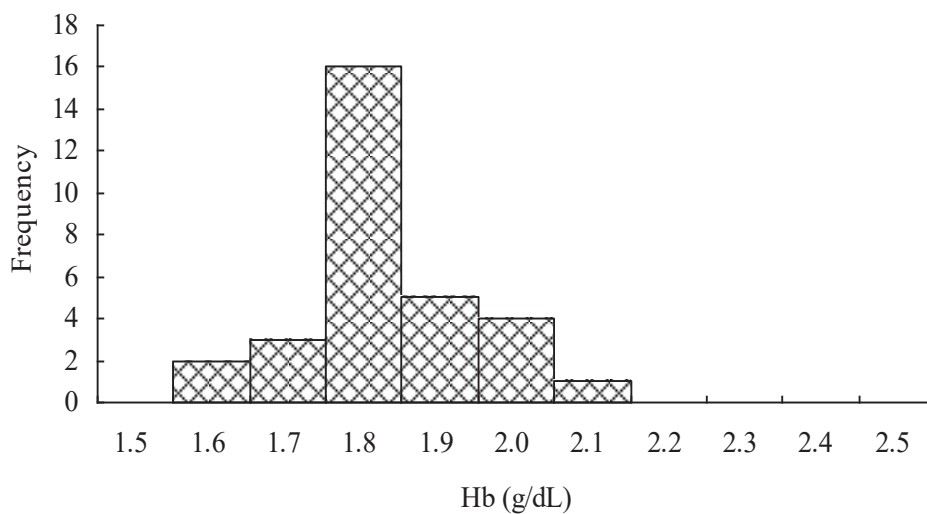
Sample 1

Median = 2.1 (n = 31)
Mean* = 2.1 (n = 31)
SD* = 0.10
CV = 4.8%



Sample 2

Median = 2.0 (n = 31)
Mean* = 2.0 (n = 31)
SD* = 0.12
CV = 6.0%



Sample 3

Median = 1.8 (n = 31)
Mean* = 1.8 (n = 31)
SD* = 0.00
CV = 0.0%

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