External Quality Assurance (EQA) of G6PD Quantitative Test

Survey No. : RH2020-01 Sample sent on : 2020/02/24 Reporting deadline : 2020/03/02

Sample sent : 29 set Results reported (%) : 29 (100%)

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	Hb 2	Hb 3
				(U/gHb)	*D%*	z score	SDI	(U/gHb)	*D%*	z score	SDI	(U/gHb)	*D%*	z score	SDI	(g/dL)	(g/dL)	(g/dL)
F02	F02	4	5	18.8	6.2%	0.9	1.4	2.3	4.5%	0.5	1.0	10.8	4.9%	0.7	1.1	2.0	1.8	1.9
F03	F03	4	5	17.8	0.6%	0.1	0.1	2.3	4.5%	0.5	1.0	10.6	2.9%	0.4	0.6	2.1	2.1	2.0
F04	F04	6	5	17.6	-0.6%	-0.1	-0.1	2.2	0.0%	0.0	0.0	10.5	1.9%	0.3	0.4	1.9	2.0	2.0
F05	F05	4	5	16.7	-5.6%	-0.8	-1.3	2.2	0.0%	0.0	0.0	9.4	-8.7%	-1.2	-1.9	2.3	2.1	2.1
F07	F07	5	5	18.0	1.7%	0.2	0.4	2.4	9.1%	1.0	2.0	10.7	3.9%	0.6	0.9	2.2	2.1	2.1
F09	F09	7	5	17.1	-3.4%	-0.5	-0.8	2.3	4.5%	0.5	1.0	10.1	-1.9%	-0.3	-0.4	2.2	2.1	2.1
F10	F10	3	5	16.1	-9.0%	-1.3	-2.1	2.3	4.5%	0.5	1.0	10.4	1.0%	0.1	0.2	2.2	1.9	2.0
F11	F11	7	5	17.6	-0.6%	-0.1	-0.1	2.2	0.0%	0.0	0.0	10.2	-1.0%	-0.1	-0.2	2.2	1.9	1.9
F12	F12	7	5	18.9	6.8%	1.0	1.6	2.4	9.1%	1.0	2.0	10.9	5.8%	0.8	1.3	2.2	1.9	2.0
F13	F13	7	5	17.7	0.0%	0.0	0.0	2.3	4.5%	0.5	1.0	10.3	0.0%	0.0	0.0	2.1	2.0	1.9
F14	F14	7	5	17.7	0.0%	0.0	0.0	2.3	4.5%	0.5	1.0	10.4	1.0%	0.1	0.2	2.1	2.0	2.0
F15	F15	3	5	16.9	-4.5%	-0.6	-1.1	2.1	-4.5%	-0.5	-1.0	9.8	-4.9%	-0.7	-1.1	2.3	2.1	2.1
F17	F17	3	5	18.9	6.8%	1.0	1.6	2.2	0.0%	0.0	0.0	11.0	6.8%	1.0	1.5	2.1	2.0	2.0
F18	F18	3	5	17.3	-2.3%	-0.3	-0.5	2.1	-4.5%	-0.5	-1.0	10.1	-1.9%	-0.3	-0.4	2.0	2.0	2.0
F19	F19	7	5	17.6	-0.6%	-0.1	-0.1	2.2	0.0%	0.0	0.0	10.6	2.9%	0.4	0.6	2.0	2.0	1.9
F20	F20	6	5	18.2	2.8%	0.4	0.7	2.2	0.0%	0.0	0.0	10.0	-2.9%	-0.4	-0.6	2.0	2.0	1.9
F21	F21	7	5	17.0	-4.0%	-0.6	-0.9	2.0	-9.1%	-1.0	-2.0	10.0	-2.9%	-0.4	-0.6	2.1	1.9	1.9
F22	F22	4	5	17.6	-0.6%	-0.1	-0.1	2.2	0.0%	0.0	0.0	10.7	3.9%	0.6	0.9	2.2	2.1	2.0
F24	F24	7	5	18.8	6.2%	0.9	1.4	2.3	4.5%	0.5	1.0	10.8	4.9%	0.7	1.1	2.0	1.9	1.9
F25	F25	7	5	17.1	-3.4%	-0.5	-0.8	2.2	0.0%	0.0	0.0	9.9	-3.9%	-0.6	-0.9	2.1	1.9	1.9
F26	F26	4	5	17.7	0.0%	0.0	0.0	2.1	-4.5%	-0.5	-1.0	9.8	-4.9%	-0.7	-1.1	2.1	2.0	2.0
F27	F27	3	5	18.0	1.7%	0.2	0.4	2.3	4.5%	0.5	1.0	9.9	-3.9%	-0.6	-0.9	2.2	2.1	2.1
F28	F28	3	5	18.2	2.8%	0.4	0.7	2.2	0.0%	0.0	0.0	10.5	1.9%	0.3	0.4	2.1	1.9	2.0
F29	F29	7	5	18.1	2.3%	0.3	0.5	2.2	0.0%	0.0	0.0	10.7	3.9%	0.6	0.9	2.1	2.0	2.0
F30	F30	5	5	17.4	-1.7%	-0.2	-0.4	2.2	0.0%	0.0	0.0	10.0	-2.9%	-0.4	-0.6	2.1	2.0	2.0
F31	F31	4	5	17.9	1.1%	0.2	0.3	2.2	0.0%	0.0	0.0	10.3	0.0%	0.0	0.0	2.2	2.0	1.9
F32	F32	4	5	17.3	-2.3%	-0.3	-0.5	2.2	0.0%	0.0	0.0	10.0	-2.9%	-0.4	-0.6	2.1	2.0	2.0
F33	F33	6	5	18.9	6.8%	1.0	1.6	2.5	13.6%	1.5	3.0	11.4	10.7%	1.5	2.3	2.0	1.9	1.8
F34	F34	4	5	16.9	-4.5%	-0.6	-1.1	2.1	-4.5%	-0.5	-1.0	9.6	-6.8%	-1.0	-1.5	2.2	2.0	2.0
Total participating laboratories = 29																		
Xa (Median)	-	5	-	17.7				2.2				10.3				2.1	2.0	2.0
u_{Xa}	-	-	-	0.155				0.020				0.096				-	-	-
σ_p	-	-	-	1.239				0.200				0.721				-	-	-
σ_p'	-	-	-	-				-				-				-	-	-
Range	-	3-7	-	16.1-18.9				2.0-2.5				9.4-11.4				1.9-2.3	1.8-2.1	1.8-2.1
n	-	-	-	29				29				29				29	29	29
Mean	-	-	-	17.7				2.2				10.3				2.1	2.0	2.0
S.D.	-	-	-	0.76				0.10				0.47				0.10	0.09	0.08
C.V.	-	-	-	4.3%				4.5%				4.6%				4.8%	4.5%	4.0%

Note:

1. *D%* = [(X - Xa) / Xa] x 100% ; X = Your Results , Xa = 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 Xa ; but while Xa < 2.9 U/gHb, σ_p = 0.2 U/gHb
4. Adjusted SD for proficiency assessment (σ_p') = ($\sigma_p^2 + u_{Xa}^2$)$^{1/2}$. σ_p' is used for proficiency assessment when $u_{Xa} \geq 0.3\sigma_p$
5. z score = D / σ_p ; D = X - Xa, 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 (Xa) 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 | <= 2; Caution : 2 < | z | <= 3; Unsatisfactory : | z | > 3
10. Maximum Allowable Deviation (MAD) = 3 x (σ_p / Xa) x 100% or 3 x (σ_p' / Xa) x 100% when $u_{Xa} \geq 0.3\ \sigma_p$

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

Long Term Observation of Blood G6PD Quantitative Test EQA Survey Results

Survey No : RH2020-01 (in green)

- Total participants' CV result ploted against surveys

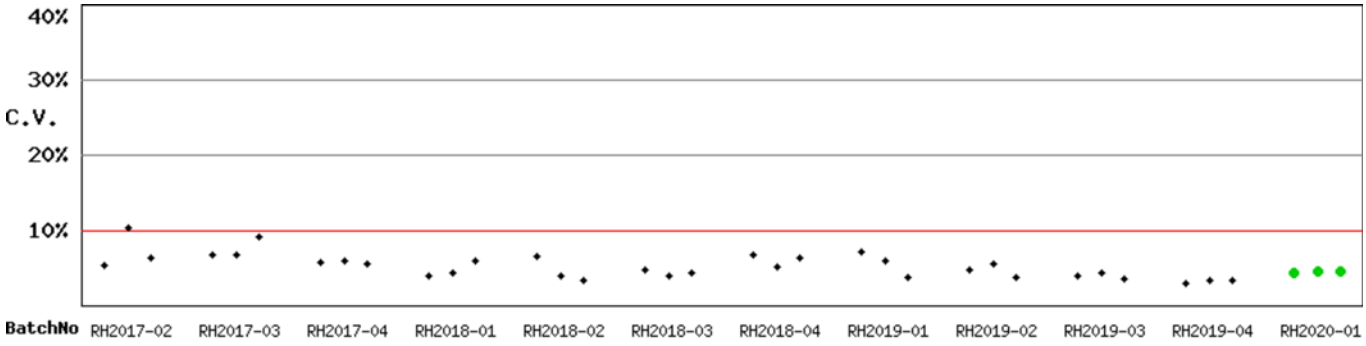

Fig RH-2.1

- Total participants' CV result ploted against G6PD activities

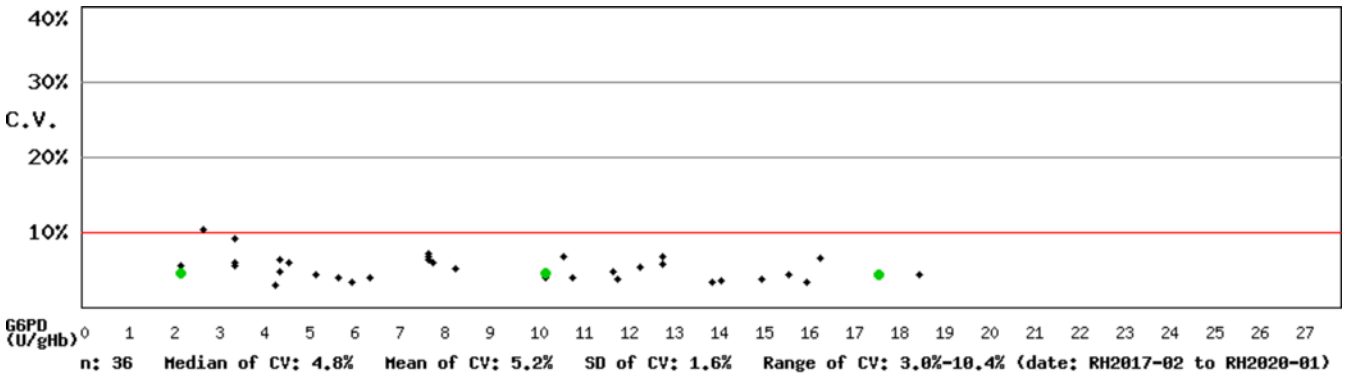

Fig RH-2.2

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

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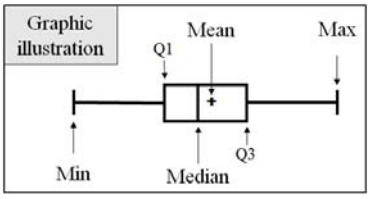
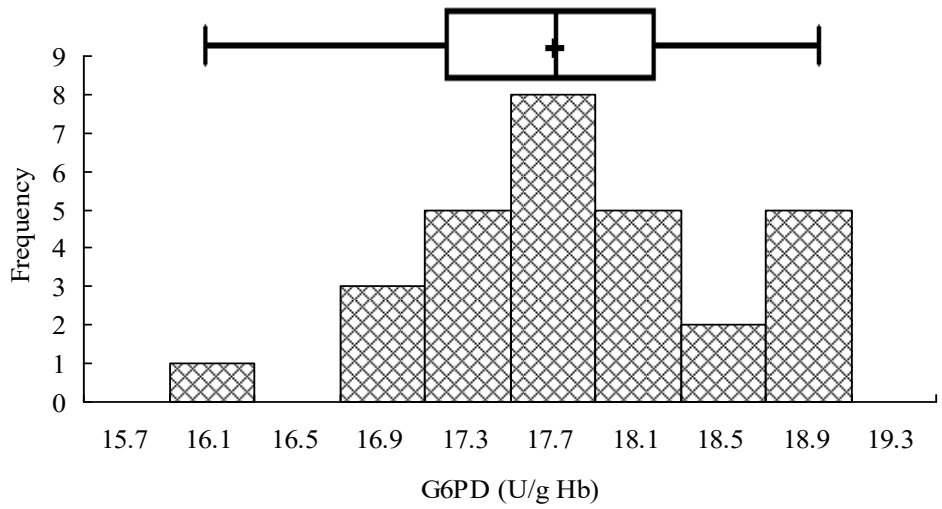
RH2020-01 Distribution of G6PD Test Results

Survey No. : RH2020-01 Sample sent on : 2020/02/24 Reporting deadline : 2020/03/02

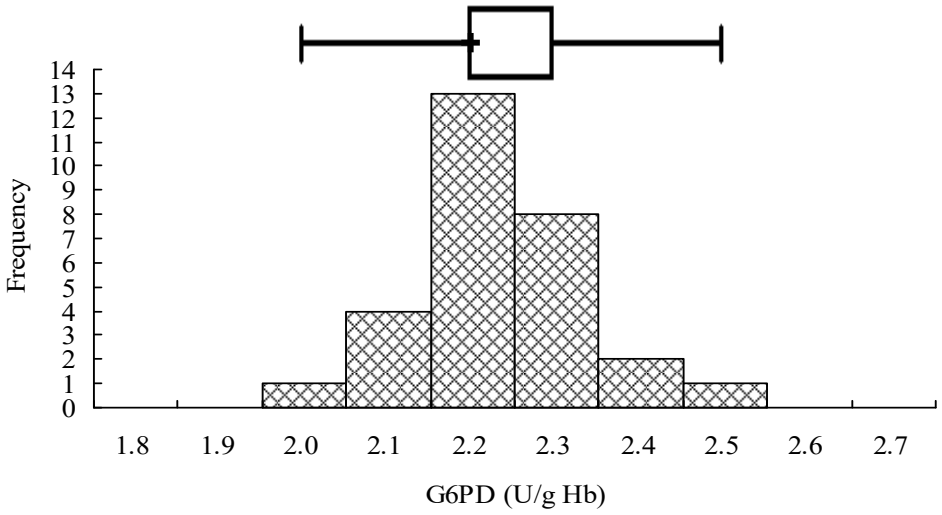
Results reported (%) : 100%





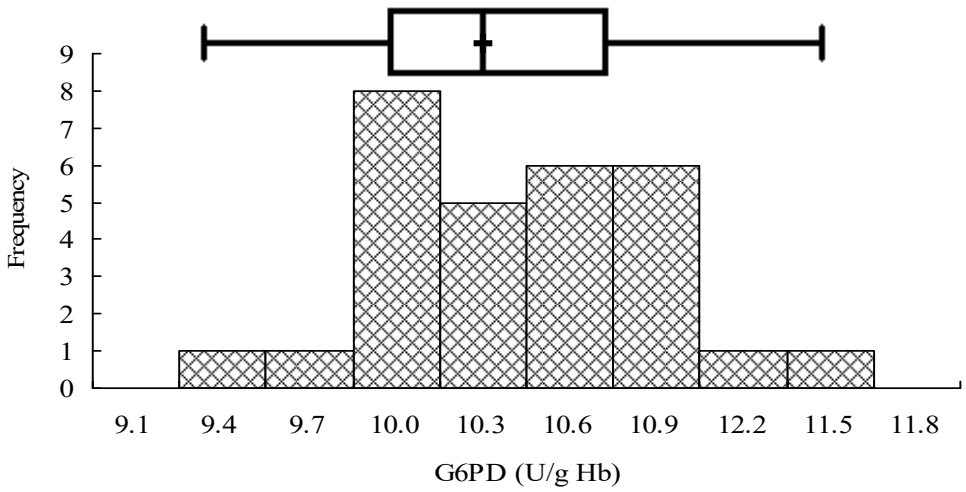
Sample 1

Median = 17.7 (n = 29)
Mean* = 17.7 (n = 29)
SD* = 0.76
CV = 4.3%



Sample 2

Median = 2.2 (n = 29)
Mean* = 2.2 (n = 29)
SD* = 0.10
CV = 4.5%



Sample 3

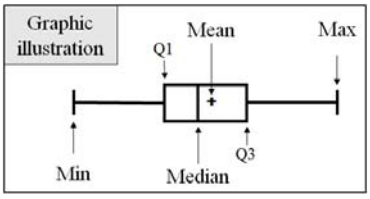
Median = 10.3 (n = 29)
Mean* = 10.3 (n = 29)
SD* = 0.47
CV = 4.6%

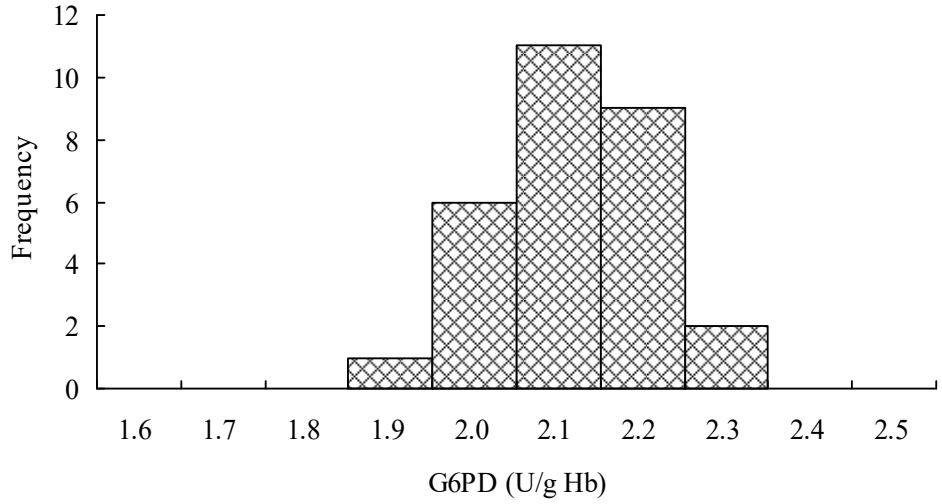
*Robust results (Mean and SD) were calculated by Algorithm A according to ISO 13528

RH2020-01 Distribution of Hb Test Results

Survey No. : RH2020-01 Sample sent on : 2020/02/24 Reporting deadline : 2020/03/02

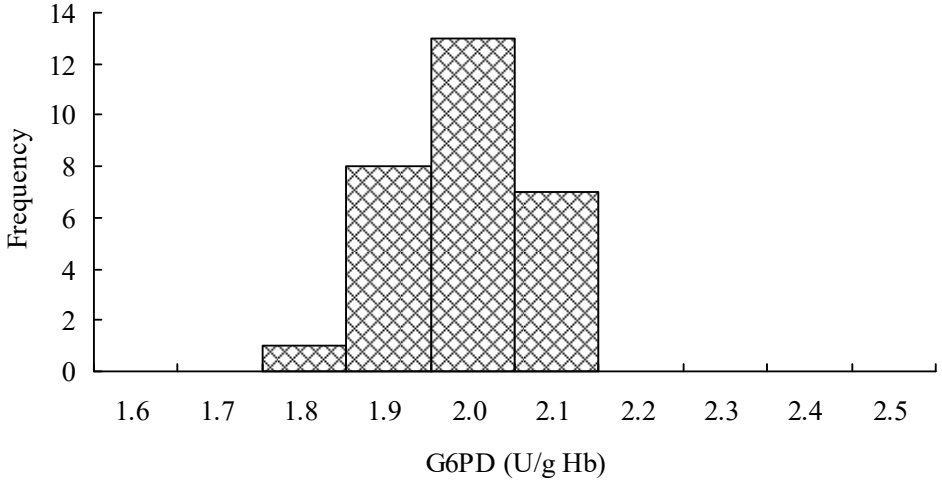
Results reported (%) : 100%





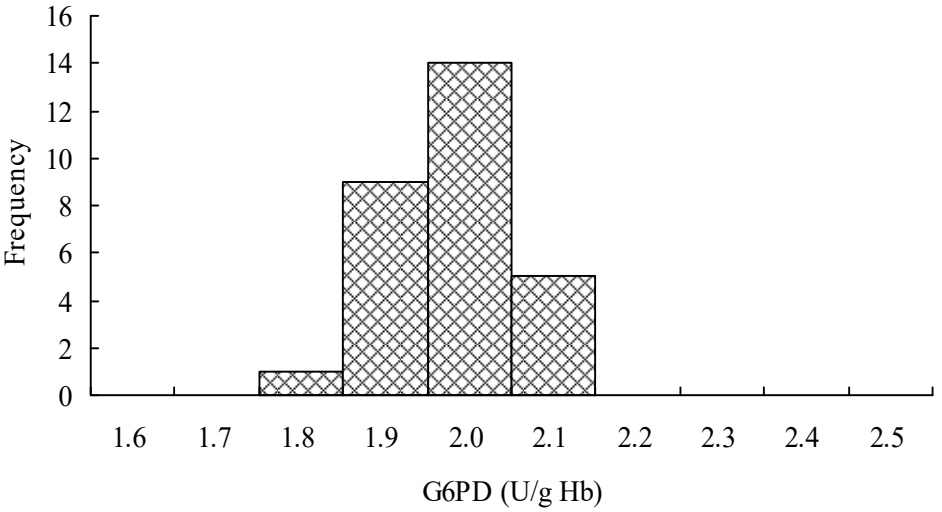
Sample 1

Median = 2.4 (n = 27)
Mean* = 2.4 (n = 27)
SD* = 0.15
CV = 6.3%



Sample 2

Median = 2.0 (n = 27)
Mean* = 2.0 (n = 27)
SD* = 0.00
CV = 0.0%



Sample 3

Median = 2.2 (n = 27)
Mean* = 2.2 (n = 27)
SD* = 0.16
CV = 7.3%

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