



Application Report

Calibration and Traceability

Version 2

cobas Lipid Panel (REF 06380115190)

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**Change History**

Document Version	Effective Date	Summary of Changes
1.0	03-Dec-2020	Initial Document
2.0	Approval date	HDL reference assay update: Gen. 3 replaced by Gen. 4

Calibration and Traceability

Introduction

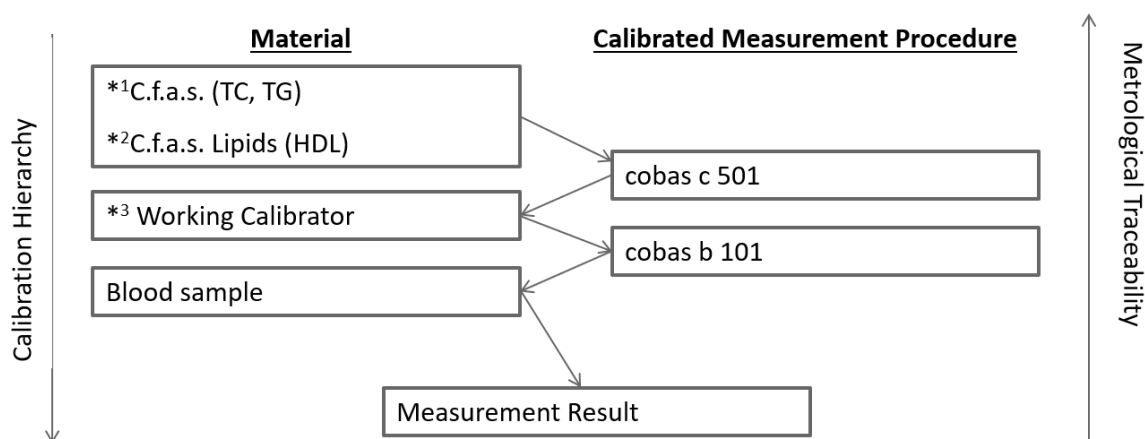
The **cobas** Lipid Panel on the **cobas b** 101 system is traceable to the CDC reference methods for the measurement of Total Cholesterol and HDL-Cholesterol. Triglycerides is traceable to the ID-MS reference method. The instrument automatically reads in the lot-specific calibration data from the barcode information printed on the disc, eliminating the need for calibration by the user.

Summary

cobas Lipid Panel is traceable to the references of the working calibrators. The working calibrators are traceable to the reference methods of Roche Calibrator for automated systems (C.f.a.s.) for Total Cholesterol and Triglycerides and C.f.a.s. Lipids for HDL Cholesterol.

Method

The Roche Calibrators for automated systems (C.f.a.s.) are used to establish the assigned values for the working calibrators on the reference system **cobas c** 501. The working calibrators are used to assign the lot specific calibration data for the cobas Lipid Panel on the **cobas b** 101 system (see also attachment 1).



***3 Working Calibrator materials used**

	Reference Methods
*1TC	Abell-Kendall
*1TG	ID-MS
*2HDL	Precipitation by heparin-manganese sulphate and Abell-Kendall

	Main component	Additive materials	P/N	Manufacuter
TC	Human serum	Cholesterol Supertrate, Bovin	82-023-1	Millipore
TG	Human serum	Egg York Emulsion	SR004 7C	Oxoid
HDL	Human serum	N/A	N/A	N/A

Functional Requirements for calibrated Lipid PanelPrecision with Serum, Whole Blood and Controls for Total Cholesterol:for samples ≤ 120 mg/dL: SD ≤ 3.6 mg/dLfor samples > 120 mg/dL: CV $\leq 3\%$ Total Error with Serum for Total Cholesterol:TE $\leq 8.9\%$ Precision with Serum, Whole Blood and Controls for Triglycerides:for samples ≤ 120 mg/dL: SD ≤ 6 mg/dLfor samples > 120 mg/dL: CV $\leq 5\%$ Total Error with Serum for Triglycerides:TE $\leq 15\%$ Precision with Serum, Whole Blood and Controls for HDL Cholesterol:for samples ≤ 42 mg/dL: SD ≤ 1.7 mg/dLfor samples > 42 mg/dL: CV $\leq 4\%$ Total Error with Serum for HDL Cholesterol:TE $\leq 13\%$ **Attachments**

- 1 Standardization Transfer Sheet

Attachment 1 Standardization Transfer Sheet

Assay	Lipid panel cobas b 101
Method	cobas Lipid Panel (06380115) on cobas b 101 (HDL, TC, TG)
Calibrator	Factory calibrated
Controls	cobas Lipid Control (06380182)

High-density lipoprotein cholesterol (HDL-C)				
Assay	HDL-Cholesterol Gen.4			
Method	HDL-Cholesterol Gen.4 (Cat. No. 07528566190) on cobas c 501. Calibrator: C.f.a.s. Lipids (Cat.No. 12172623122)			
Controls	PreciControl ClinChem Multi 1 (Cat.No. 05947626190, 05117003190, 05117208922) PreciControl ClinChem Multi 2 (Cat.No. 05947774190, 05117216190, 05117291922)			
-	-			
-	METHODS AND MATERIAL	RATIONALE	COMMUTABILITY	STABILITY
REFERENCE METHOD	According to the CDC reference method [Abell-Kendall analysis of cholesterol in heparin-manganese precipitates].	Internationally recognized reference method.	Samples are clinical samples.	Fresh clinical samples are analyzed by the reference and comparative methods on the same day.
REFERENCE MATERIAL	-	-	-	-
WORKING CALIBRATOR I	S1: H ₂ O stored at room temperature. S2: ML C.f.a.s. Lipids is a lyophilized human serum-based calibrator.	S1: Zero value cannot be obtained with native samples. S2: Stable native human material in high concentrations not available.	Minimal change from clinical sample. Basic commutability has been shown by R&D.	S1: H ₂ O stored at room temperature. S2: ML C.f.a.s. Lipids is a lyophilized human serum-based calibrator.
WORKING CALIBRATOR II	Not applicable	Not applicable	Not applicable	Not applicable

COMMERCIAL CALIBRATOR	S1: H ₂ O stored at room temperature. S2: C.f.a.s. Lipids is a lyophilized human serum-based calibrator.	S1: Zero value cannot be obtained with native samples. S2: Stable native human material in high concentrations not available.	Minimal change from clinical sample.	S1: H ₂ O stored at room temperature. S2: C.f.a.s. Lipids is a lyophilized human serum-based calibrator.
WORKING CALIBRATOR	3 concentrations and 1 verification sample Lv1: 40 ± 10mg/dL Lv2: 55 ± 10mg/dL Lv3: 75 ± 10mg/dL verification sample: 65 ± 10mg/dL	No standard material available which is commutable – native samples in relevant concentration range are available	Native samples	Storage -60 to -80°C freezing / thawing only once - stability has been shown by R&D.

Total cholesterol (TC)				
Assay	Cholesterol			
Method	Abell-Kendall [CHOL2] (Cat. No. 12016630, 11489232, 11491458, 11875540, 11875523, 03039773, 05168538) on cobas c 501 Calibrator: C.f.a.s. (Cat.No.10759350190)			
Controls	PreciControl ClinChem Multi 1 (Cat.No. 05947626190, 05117003190, 05117208922) PreciControl ClinChem Multi 2 (Cat.No. 05947774190, 05117216190, 05117291922)			
-	-			
-	METHODS AND MATERIAL	RATIONALE	COMMUTABILITY	STABILITY
REFERENCE METHOD	According to the CDC reference method [Abell-Kendall analysis of cholesterol in heparin-manganese precipitates].	Internationally recommended reference method.	Not applicable	Not applicable
REFERENCE MATERIAL	NIST SRM 911c	-	-	-
WORKING CALIBRATOR I	Human serum pools storage: -60 to -90°C	clinically relevant measuring range and sample material	identical with clinical sample	storage: -60 to -90°C only used once for measurements
WORKING CALIBRATOR II	S1: 0,9 % NaCl stored at room temperature. S2: C.f.a.s. is a lyophilized human serum-based calibrator. The reactive component cholesterol is spiked with bovine plasma storage: -60 to -90°C	S1: zero value cannot be obtained by natural samples. S2: stable native human material in high concentrations not available	minimal change to clinical sample, basic commutability has been shown by R&D	freezing/thawing stability has been shown by R&D Shelf life: at least 36 months at -60 to -90°C
PRODUCT CALIBRATOR	S1: 0,9 % NaCl stored at room temperature. S2: C.f.a.s. is a lyophilized human serum-based calibrator. The reactive component cholesterol is spiked with bovine plasma storage: 2-8° C	S1: zero value cannot be obtained by natural samples. S2: stable native human material in high	minimal change to clinical sample, basic commutability has been shown by R&D	24 months real time stability has been shown by QA



		concentrations not available		
CONTROLS TRUENESS	Precinorm U (plus), Precipath U (plus), PreciControl ClinChem Multi 1 and 2, Precinorm L and Precipath L are lyophilized stabilized human serum-based controls. The reactive component cholesterol is spiked with bovine plasma storage: 2-8° C	stable native human material in high concentrations not available	minimal change to clinical sample, basic commutability has been shown by R&D	30 months real time stability has been shown by QA
STATISTICAL METHOD	A. Konnert, C. Berding: The statistical basis of standardization designs for diagnostic assays (Accred Qual Assur (2004) 9:457 - 463)			
WORKING CALIBRATOR	<p>Minimum 3 concentrations</p> <p>Lv1: 30 ± 5 mg/dL</p> <p>Lv2: 60 ± 5 mg/dL</p> <p>Lv3: 120 mg/dL ± 5%</p> <p>Lv4: 200 mg/dL ± 5%</p> <p>Lv5: 300 mg/dL ± 5%</p> <p>Lv6: 400 mg/dL ± 5%</p> <p>Lv7: 500 mg/dL ± 5%</p> <p>Lv8: 600 mg/dL ± 5%</p> <p>are based on human serum with cholesterol supertrate bovine additive</p>	<p>No standard material available which is commutable.</p> <p>native samples in high concentration range are not always available</p>	minimal change to clinical sample, basic commutability has been shown by R&D	<p>Storage -60 to -80°C freezing/thawing only once.</p> <p>stability has been shown by R&D</p>

Triglycerides (TG)				
Assay	Triglycerides			
Method	TG GPO-PAP [TG] (Cat. No. 12016648, 11488872, 11730711, 11876023, 11876040, 20767107, 05171407) on cobas c 501 Calibrator: C.f.a.s. (Cat.No. 10759350190)			
Controls	PreciControl ClinChem Multi 1 (Cat.No. 05947626190, 05117003190, 05117208922) PreciControl ClinChem Multi 2 (Cat.No. 05947774190, 05117216190, 05117291922)			
-	-			
-	METHODS AND MATERIAL	RATIONALE	COMMUTABILITY	STABILITY
REFERENCE METHOD	ID-MS (Siekmann, L., Schönfelder, A., Siekmann, A. (1986): Isotope dilution-mass spectrometry of total glycerol in human serum – a reference method in clinical chemistry. Z. anal. Chem. 324, 280-281	Internationally recommended reference method.	Not applicable	Not applicable
REFERENCE MATERIAL	NIST SRM 1595 Triolmitin	-	-	-
WORKING CALIBRATOR I	Human serum pools storage: -60 to -90°C	clinically relevant measuring range and sample material	identical with clinical sample	storage: -60 to -90°C only used once for measurements
WORKING CALIBRATOR II	S1: 0,9 % NaCl stored at room temperature. S2: C.f.a.s. is a lyophilized human serum-based calibrator. The reactive component triglycerides is spiked out of chicken egg yolk. storage: -60 to -90°C	S1: zero value cannot be obtained by natural samples. S2: stable native human material in high concentrations not available	minimal change to clinical sample, basic commutability has been shown by R&D	freezing/thawing stability has been shown by R&D Shelf life: at least 36 months at -60 to -90°C
PRODUCT CALIBRATOR	S1: 0,9 % NaCl stored at room temperature. S2: C.f.a.s. is a lyophilized human serum-based calibrator.	S1: zero value cannot be obtained by natural samples. S2: stable native human	minimal change to clinical sample, basic commutability has been shown by R&D	24 months real time stability has been shown by QA

	The reactive component triglycerides is spiked out of chicken egg yolk. storage: 2-8° C	material in high concentrations not available		
CONTROLS TRUENESS	Precinorm U (plus), Precipath U (plus), PreciControl ClinChem Multi 1 and 2, Precinorm L and Precipath L are lyophilized stabilized human serum-based controls. The reactive component triglycerides is spiked out of chicken egg yolk. storage: 2-8° C	stable native human material in high concentrations not available	minimal change to clinical sample, basic commutability has been shown by R&D	30 months real time stability has been shown by QA
STATISTICAL METHOD	A. Konnert, C. Berding: The statistical basis of standardization designs for diagnostic assays (Accred Qual Assur (2004) 9:457 - 463)			
WORKING CALIBRATOR	Minimum 3 concentrations Lv1: 30 ± 5 mg/dL Lv2: 60 ± 5 mg/dL Lv3: 120 mg/dL ± 5% Lv4: 200 mg/dL ± 5% Lv5: 300 mg/dL ± 5% Lv6: 400 mg/dL ± 5% Lv7: 500 mg/dL ± 5% Lv8: 650 mg/dL ± 5% are based on human serum with egg yolk emulsion as additive	No standard material available which is commutable. native samples in high concentration range are not always available	minimal change to clinical sample, basic commutability has been shown by R&D	Storage -60 to -80°C freezing/thawing only once. stability has been shown by R&D