

European Biologic Goals

In the early 1990s, a group of European scientists formed to recommend the best targets for imprecision, inaccuracy, and total error (calculated from biologic variation). This became called the "European Biologic Goals and Calculated Biologic Allowable Total Errors." While later eclipsed by the work of Dr. Carmen Ricos et al (the biodatabase desirable specifications), these quality requirements remain an important resource.

Proposed and interim (in parenthesis) quality specifications for total analytical imprecision (CV,%) and inaccuracy (as % maximum allowable deviation) for commonly analysed quantities: these should be achieved in at least 95% of experiments performed. [From Frazer CG, Hyltoft Petersen P, Ricos C, Haeckel R. "Proposed quality specifications for imprecision and inaccuracy of analytical systems for clinical chemistry." Eur J Clin Chem Clin Biochem 1992;30:311-317] The total error is calculated from the equation $TE = 1.65 (\text{imprecision}) + \text{inaccuracy}$ [From Hyltoft Petersen P, Ricos C, Stockl D, Libeer JC, Baadenhuijsen H, Fraser C, Thienpont L. "Proposed guidelines for the internal quality control of analytical results in the medical laboratory." Eur J Clin Chem Clin Biochem 1996;34:983-999]

European biologic goals and biologic allowable total errors			
Quantity	Imprecision %	Inaccuracy %	Total Error %
Albumin	1.4 (1.8)	1.1 (2.8)	3.4 (5.8)
Bicarbonate	2.3 (4.9)	1.6 (4.6)	5.4 (12.7)
Bilirubins	11.3	9.8	28.4
Calcium	0.9 (1.5)	0.7 (1.8)	2.2 (4.3)
Chloride	0.7 (1.0)	0.5 (1.4)	1.7 (3.0)
Cholesterol	2.7	4.1	8.6
Creatinine	2.2	2.8 (4.4)	6.4 (8.0)
Glucose	2.2	1.9 (4.4)	5.5 (8.0)
Iron	15.9	8.9	35.1
Lithium	3.6	4.2	10.1
Magnesium	1.1 (2.6)	1.6 (2.2)	3.4 (6.5)
Phosphate	4	3.1 (8.0)	9.7 (14.6)
Potassium	2.4	1.6 (4.8)	5.6 (8.4)
Proteins	1.4	1.5 (2.8)	3.8 (5.1)
Triacylglycols	11.5	15.6	34.6

Urea	6.3	5.3	15.7
Urate	4.2	4.0 (8.4)	10.9 (15.3)
Quantity	Imprecision %	Inaccuracy %	Total Error %
Acid phosphatase	4.5	2.1 (9.0)	9.5 (16.4)
Alanine aminotransferase	13.6	13.6	36
Alkaline phosphatase	3.4	6.4	12
Amylase	3.7	6.5 (7.4)	12.6 (13.5)
Aspartate aminotransferase	7.2	6.2	18
Creatine kinase	20.7	19.8	54
Gamma-Glutamyl transferase	7.4	21.8	34
Lactate dehydrogenase	3.9	4.1 (7.8)	10.5 (14.2)
Quantity	Imprecision %	Inaccuracy %	Total Error %
Thyroxine (total)	3.4 (4.1)	4.1 (6.8)	9.7 (13.6)
Triiodothyronine	4.0 (4.7)	5.5 (8.0)	12.1 (15.8)
Digoxin	3.8 (4.7)	3.9	10.2 (11.7)
Transferrin	2.4 (4.0)	2.3 (4.8)	6.3 (11.4)
IgG	1.9 (3.7)	5	8.1 (11.1)
IgA	2.2 (3.8)	12.5	16.1 (18.8)
IgM	2.3 (5.4)	12.7	16.5 (21.6)