Prevalence and description of hyponatremia in a Swiss tertiary care hospital: an observational retrospective study

Henri Lu[1], Peter Vollenweider[2], Sébastien Kissling[3], Pedro Marques-Vidal[2]

[1]: Department of cardiology, Lausanne University Hospital and University of Lausanne, Lausanne, Switzerland
[2]: Department of internal medicine, Lausanne University Hospital and University of Lausanne, Lausanne, Switzerland
[3]: Service of nephrology, Department of internal medicine, Lausanne University Hospital and University of Lausanne, Lausanne, Switzerland

Supplementary table 1. International classification of diseases – 10th edition (ICD-10) codes used to define the main causes for admission.

	ICD-10 codes
Infectious diseases	A00-B99
Cancers	C00-D49, R97
Pulmonary diseases	J00-J99, Q30-Q34, R04-R09, R91
Heart diseases	I05-I52, Q20-Q28, R00-R03
Liver diseases	K70-K77, R16-R18
Neurological diseases	G00-G99, F01-F09, I60-I69, Q00-Q07, R25-R29, R40-R44, R51, R56, R90
Endocrine disorders	E00-E36
Psychiatric disorders	F10-F69, F90-F99, R45, R46
Other diseases	All other codes

Supplementary table 2. Comparison between included and excluded admissions. Lausanne University Hospital, 2012-2018.

	Included (N=6539)	Excluded (N=594)	P-value
Women (%)	2794 (42.7)	246 (41.4)	0.535
Age (years)	69.2 ± 16.3	65.6 ± 16.9	<0.001
Length of stay (days)	9 [6 - 14]	13 [8 - 23]	<0.001 §

Results are expressed as number of admissions (column percentage) for categorical variables and as average ± standard deviation or median [interquartile range] for continuous variables. Between-group comparisons performed using chi-square for categorical variables and student's t-test or Kruskal-Wallis test (§) for continuous variables.

Supplementary table 3. Demographic and clinical characteristics of hospital stays according to persistent hyponatremia. Lausanne University Hospital, 2012-2018.

	No	Yes	P-value
N	1407	716	
Women (%)	602 (42.8)	267 (37.3)	0.015
Age groups (%)			0.453
< 60	359 (25.5)	166 (23.2)	
60-69	334 (23.7)	189 (26.4)	
70-79	337 (24.0)	165 (23.0)	
≥ 80	377 (26.8)	196 (27.4)	
Main diagnosis on discharge			<0.001
Cancer	108 (7.7)	87 (12.2)	
Pulmonary disease	317 (22.5)	124 (17.3)	
Heart disease	184 (13.1)	111 (15.5)	
Liver disease	68 (4.8)	57 (8.0)	
Neurological disease	61 (4.3)	31 (4.3)	
Endocrine disorders	70 (5.0)	27 (3.8)	
Psychiatric disorders	17 (1.2)	11 (1.5)	
Other diseases	582 (41.4)	268 (37.4)	

Results are expressed as number of hospitalizations (percentage). Between-group comparisons performed using chi-square.

Supplemental table 4. Number of value of sodium measurements according to categories of sodium levels. Lausanne University Hospital, 2012-2018.

	Number of measurements	P-value	Na first measurement (mmol/L)	P-value	Na last measurement (mmol/L)	P-value	Difference last-first (mmol/l)	P-value
Natremia levels		<0.001‡		NR		NR		<0.001‡
Normal	4 [2 ; 6]		140 ± 3		140 ± 3		0 [-1 ; 2]	
Decreased	6 [4 ; 10]		132 ± 6		136 ± 4		4 [0 ; 7]	
Natremia levels		<0.001‡		NR		<0.001		<0.001‡
Normal	4 [2 ; 6]		140 ± 3		140 ± 3		0 [-1 ; 2]	
Mild (130-135 mEq/L)	5 [3 ; 8]		134 ± 3		137 ± 3		3 [-1 ; 6]	
Moderate (125-129 mEq/L)	8 [5 ; 12]		130 ± 4		135 ± 5		5 [1 ; 10]	
Severe (<125 mq/L)	10 [7 ; 16]		124 ± 8		134 ± 6		12 [5 ; 17]	
Persistent hyponatremia		<0.001‡		NR		NR		NR
Normal	4 [2 ; 6]		140 ± 3		140 ± 3		0 [-1 ; 2]	
Non-persistent	6 [4 ; 11]		133 ± 5		138 ± 3		5 [2 ; 9]	
Persistent	6 [4 ; 9]		132 ± 6		132 ± 3		0 [-3 ; 3]	

NR, not relevant. Results are expressed as median [interquartile range] or mean ± standard deviation. Between-group bivariate analysis performed using student's or Kruskal-Wallis test