Geriatrics Peer Review

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OUTCOMES OF CONTINUOUS PROCESS IMPROVEMENT OF NUTRITIONAL CARE PROGRAM AMONG GERIATRIC UNITS IN BELGIUM

Peer Review, Geriatrics 2000

Introduction

- Up to 65% of elderly patients are protein-energy undernourished (PEU) at admission or acquire nutritional deficits while hospitalised
- PEU is associated with:
  - high hospitalisation stay
  - high morbidity and mortality
  - high rehospitalisation rate

Aims

- to assess the quality of care concerning nutrition among Belgian geriatric units
- to include more routinely nutritional assessments and interventions into comprehensive geriatric assessment
- to assess the impact of nutritional recommendations on nutritional status an on the length of hospitalisation

Methodology

- Prospective survey of consecutive admissions between January and June 2001
- Comprehensive geriatric assessment
- Nutritional assessment (MNA & PAB & Lymphocyte)
- two phases project design:

Observational *Interventional*

0 3 6 months

Methodology: 2 phases

Observation

- Comprehensive geriatric assessment and MNA
- Routine nutrition

Intervention

- Comprehensive geriatric assessment and MNA
- **« Flow Chart»**
- **« Meals on Wheels » approach**

0 3 6 months

FLOW CHART SUGGESTING A RATIONAL APPROACH TO THE MANAGEMENT OF MALNUTRITION

- MNA <23.5 points and/or PAB<0.2 g/l

- START CALORIC SUPPLEMENTATION
- RULE OUT TREATABLE CAUSES/ UTILIZE MEALS-ON-WHEELS APPROACH

- IF PAB FAILS TO RAISE
- CONSIDER ENTERAL (or parenteral) NUTRITION

- CHECK PAB AT DISCHARGE

The « meals-on-wheels approach »

- Medicaments
- Emotions
- Anorexia
- Late life paranoia
- Swallowing (déglutition)
- Oral problems
- No money
- Wandering, (comportements)
- Hyperthyroidie, HPT1
- Entry (malabsorption)
- Eating problems (fiche)
- Low salts, low chol diets (régimes)
- Shopping

Morley 1994

Outcomes

- to assess the quality of care concerning nutrition among Belgian geriatric units
  - ☞ *descriptive statistics of nutritional status during phase 1*
- to include more routinely nutritional assessments and interventions into comprehensive geriatric assessment
  - ☞ *sensitize the teams to nutritional aspect of the comprehensive geriatric assessment*
- to assess the impact of nutritional recommendations on nutritional status an on the length of hospitalisation
  - ☞ *comparison of nutritional parameters and hospitalisation stays between phase 1 and phase 2*

Statistics

- Data will be collected in a data base using the software Access from Microsoft
- statistical analyses will be performed with the software Statistica 5 Microsoft.
- Results from groups of patients will presented as means±SD.
- Non parametric Mann Whitney test will be used to compare means between the periods of the study (observational phase versus intervention phase).
- Z-score with Yates correction will be used to assess the differences between proportions of conditions.

References

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8. Vellas B, Garry PJ, Albarede JL. Nutritional assessment as part of the geriatric evaluation : the mini nutritional assessment. Facts, Research and Intervention in Geriatrics 1997, pp 11-13 . Serdi Publishing Compagny, 3rd Edition, Vellas B, Guigoz Y, Garry P, Albarede J, editors.
9. Guigoz Y, Vellas B, Garry PJ. Mini Nutritional Assessment : a practical assessment tool for grading the nutritional state of elderly patients. Facts, Research and Intervention in Geriatrics 1997, pp 15-60 , Serdi Publishing Compagny, 3rd Edition, Vellas B, Guigoz Y, Garry P, Albarede J, editors.
10. Morley JE. Nutrition assessment is a key component of geriatric assessment. Facts, Research and Intervention in Geriatrics 1997, pp 11-13 . Serdi Publishing Compagny, 3rd Edition, Vellas B, Guigoz Y, Garry P, Albarede J, editors.

annexes

Mini Nutritional Assesment (MNA)

Indices anthropométriques

- BMI, CB, CM
- perte de poids récente

Evaluation globale

- indépendant à domicile
- plus de 3 médicaments
- maladie aiguë ou stress
- motricité
- probl neuropsy
- escarres

Indices diététiques

- combien de repas/jour
- produits laitiers, œufs, légumes, viande, poisson, volaille
- appétit
- combien de verre/jour
- se nourrit seul, avec difficulté

Evaluation subjective

Guigoz et al. facts Res Gerontol 1990

Project Management

Actions

- Presentation (2000)
- protocol sending
- Software creation for registration
- centre recruitment

Implementations

- Data collect 1srt phase
- Mail for the 2nd phase (March, 2001)
- Data collect 2nd phase (July 2001)
- Preliminary report (July 2001)
- Feed back
- Questionnaire

❶ Project presentation

- SBGG meeting Liège, ⇒Octobre 2000
- News-group 250 participants
- SBGG mailing ⇒November 2000
- G-News
- Repeated Mails ⇒December 2000

⇒400 membres

❷ protocole sending

- December 2000
- Including:
  - protocole Word
  - Encoding Software Access
  - Numeric Scales Word
  - Presentation Power Point

⇒33 centres answered

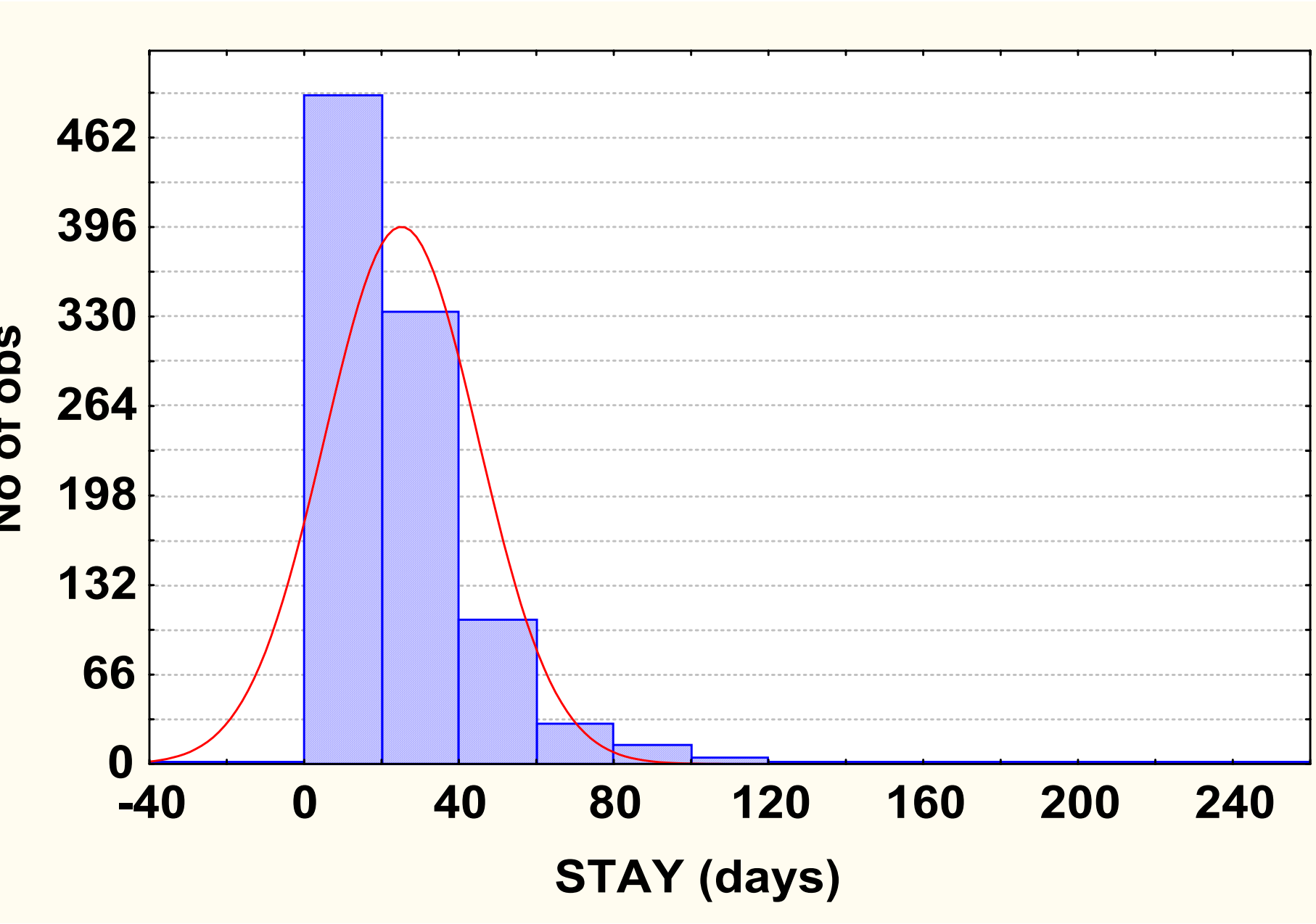
Results

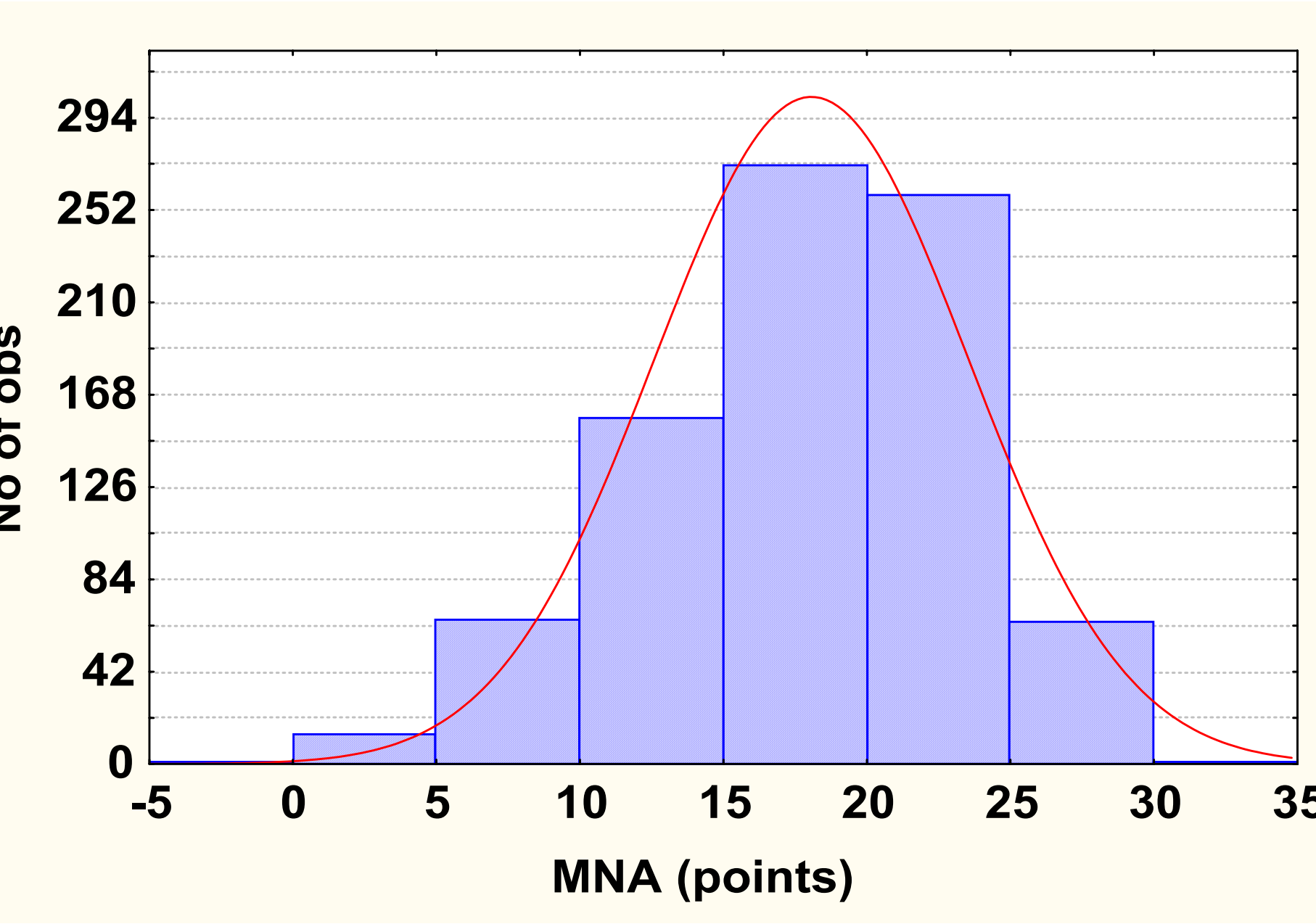
12 centers presented evaluable data

N=1139 admissions

Characteristics of 1140 consecutive admissions between January and June 2001.

	Valid N	Mean or %	Median	Min	Max	Std.Dev.
PHASE1		61%				
PHASE2		39%				
WOMEN		70%				
Stay (day)	986	25,1	20,0	1,0	223,0	19,9
Age (yr)	1097	82,9	83,0	54,0	104,0	7,3
MiniMNA (points)	634	8,4	9,0	2,0	14	3,2
MNA (points)	833	18,1	18,5	2,0	29,0	5,5


462
396
330
264
198
132
66
0
No of obs
-40
0
40
80
120
160
200
240
STAY (days)


No of obs
294
252
210
168
126
84
42
0
-5
0
5
10
15
20
25
30
35
MNA (points)

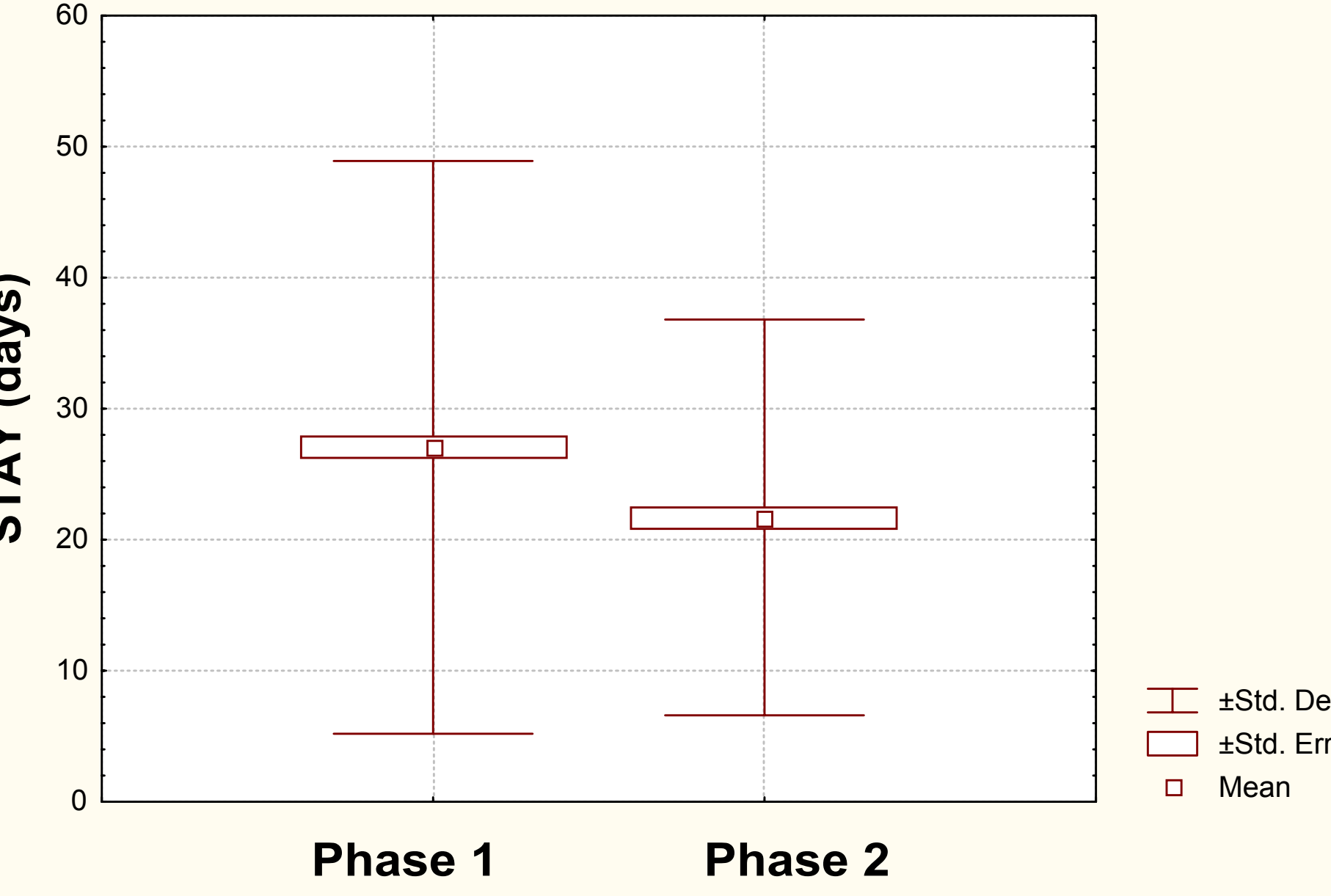
Characteristics of 1140 consecutive admissions between January and June 2001.

	Valid N	Mean or %	Median	Min	Max	Std.Dev.
Admission						
PAB	987	,185	,180	0,001	,900	,076
CRP	1076	5,3	2,3	0,10	51,6	7,5
Lymphocytes	600	1401	1353	11	3972	653
Discharge						
PAB	802	,174	,186	,001	,180	,105
CRP	873	3,6	1,2	,1	79,3	7,2
Lymphocytes	541	1527	1443	80	5200	669
Nutritional intervention:						
Caloric supplementation		22%				
Enteral		2%				
Parenteral		1%				

Characteristics of the patients according to period.

Phase I: observational period; phase II: interventional period.

	Phase I			Phase II			
	Valid N	Mean or %	Std.Dev.	Valid N	Mean or %	Std.Dev.	p
WOMEN		70%			70%		,878141
STAY (day)	632	27,1	21,9	354	21,7	15,1	**,000046**
AGE (yr)	669	82,8	7,3	428	83,1	7,2	,410498
MiniMNA(points)	437	8,3	3,2	197	8,7	3,2	,096389
MNA (points)	538	17,9	5,5	295	18,2	5,4	,572510


60
50
40
30
20
10
0
STAY (days)
Phase 1
Phase 2
±Std. De
±Std. Err
Mean

Characteristics of the patients according to period.

Phase I: observational period; phase II: interventional period.

	Phase I			Phase II			
	Valid N	Mean or %	Std.Dev.	Valid N	Mean or %	Std.Dev.	p
Admission							
PAB (g/l)	626	,183	,073	361	,187	,079	,377127
CRP(mg/100ml)	659	5,5	7,6	417	5,2	7,2	,524560
Lymphocytes count (per mm^3)	351	1405	617	249	1395	701	,855978
PAB/CRP ratio	618	,222	,446	339	,236	,723	,706348
Discharge							
PAB (g/l)	516	,172	,089	286	,176	,129	,564553
CRP(mg/100ml)	564	3,7	7,8	309	3,4	6,1	,568083
Lymphocytes count (per mm^3)	316	1552	665	225	1493	676	,314670
PAB/CRP ratio	479	,235	,299	262	,275	,413	,131448
Cal. Supplement		21%			24%		
ENTERAL		2%			3%		
PARENTER		<1%			<1%		

Characteristics of the patients according to period.

Phase I: observational period; phase II: interventional period.

	Phase I			Phase II			
	Valid N	Mean	Std.Dev.	Valid N	Mean	Std.Dev.	p
AB variations g/l)	483	-,007	,094	278	,009	,144	**,045595**
RP variations	585	-2,2	10,5	328	-1,0	23,1	,27684
ymphocytes ount variations	626	55	472	340	48	574	,83854

Determinant of admission PAB

Admission PAB and:	Valid N	Spearman R	p-level
Hospital Stay	877	-,041493	,219615
AGE	954	-,062966	,051871
MiniMNA	602	,263696	**,000000**
MNA	754	,328508	**,000000**
Admission:			
CRP	964	-,460683	**0,000000**
Lymphocytes	556	,157775	**,000187**
Discharge:			
PAB	754	,370732	**,000000**
CRP	802	-,199541	**,000000**
Lymphocytes	501	,042458	,342935
PAB Variations	734	-,430938	**0,000000**
CRP Variations	842	,373943	**,000000**
Lymphocytes Variations	870	-,117773	**,000500**

Determinant of admission PAB

Multiple regression analyse including MNA, admission CRP, and Lymphocytes count:
Adjusted R2= ,27, p< ,0000

Variable	β
MNA	**+ ,27**
Admission CRP	**- ,40**
Admission Lymphocytes count	+ ,01

Comparison between admission and discharge

a) for the whole group

	Admission			Discharge		
	Valid N	Mean	Std.Dev.	Mean	Std.Dev.	p
AB (g/l)	754	,183	,076	,176	,106	,06484
RP	859	5,5	7,4	3,6	7,2	**,00000**
ymphocytes ount	527	1404	656	1539	657	**,00000**
AB/CRP ratio	694	,22	,61	,25	,33	,16257

Comparison between admission and discharge

b) phase I:

		Admission		Discharge		
	Valid N	Mean	Std.Dev.	Mean	Std.Dev.	p
AB (g/l)	492	,183	,073	,174	,088	**,030784**
RP (mg/100ml)	559	5,5	7,4	3,7	7,8	**,000000**
ymphocytes count	314	1413	609	1556	664	**,000023**
AB/CRP ratio	460	,20	,45	,24	,30	,138019

c) phase II:

		Admission		Discharge		
	Valid N	Mean	Std.Dev.	Mean	Std.Dev.	p
AB (g/l)	262	,181	,080	,179	,132	,769169
RP (mg/100ml)	300	5,4	7,4	3,4	6,1	**,000006**
ymphocytes count	213	1390	722	1314	671	**,001748**
AB/CRP ratio	234	,25	,84	,28	,38	,558531

Determinants of hospitalisation stay:

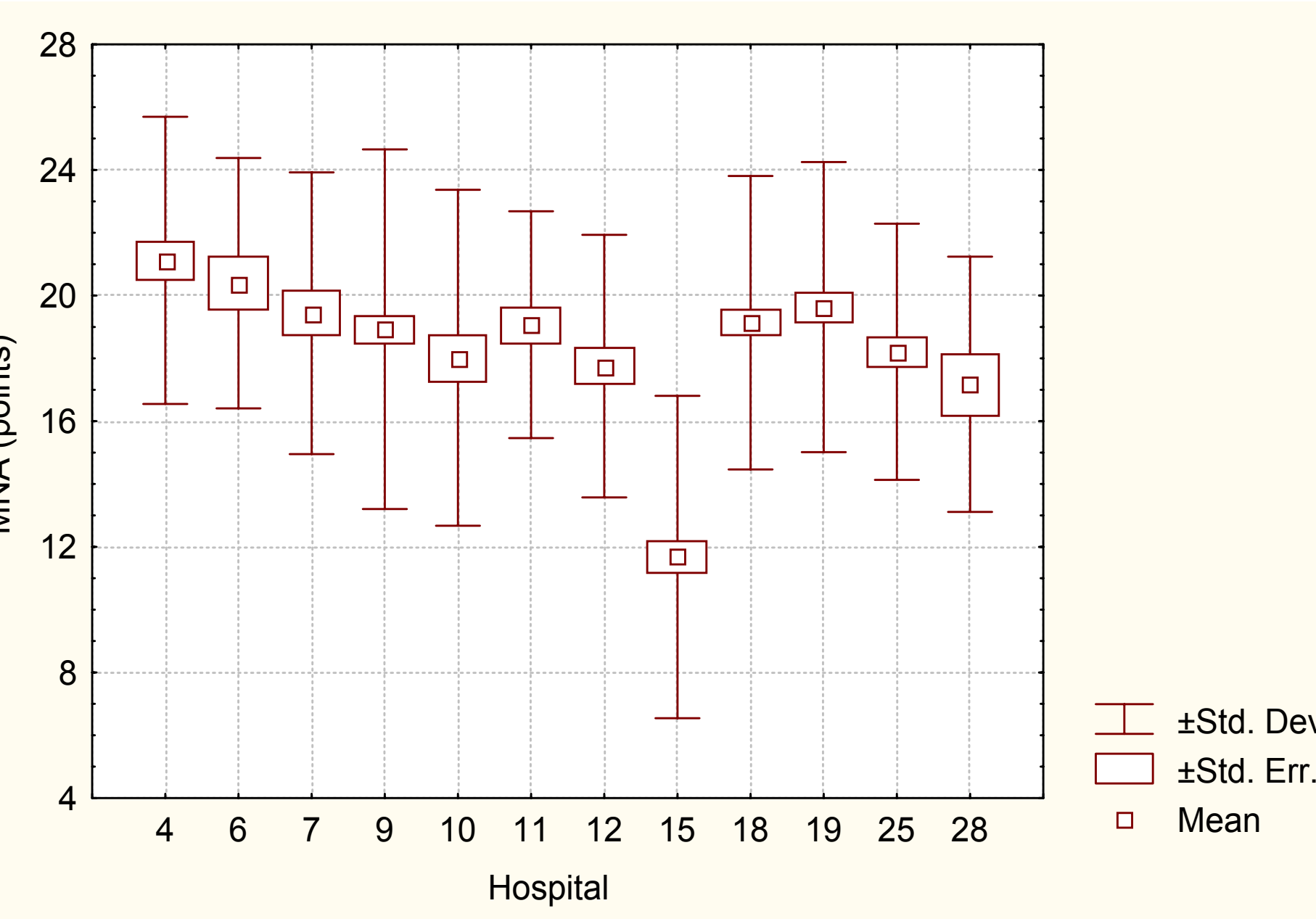
Stay and:	Valid N	Spearman R	p-level
AGE	967	-,019187	,551214
MiniMNA	603	-,089740	**,027557**
MNA	735	-,058570	,112618
Admission:			
PAB	877	-,041492	,219628
CRP	939	,069718	**,032668**
Lymphocytes	573	-,008643	,836449
PAB/CRP	857	-,079683	**,019649**
Discharge :			
PAB	763	-,018063	,618360
CRP	833	,036081	,298281
Lymphocytes	525	,015719	,719343
PAB/CRP	708	-,087265	**,020216**
PAB variations	728	-,002374	,949017
CRP Variations	865	-,015512	,648683
Lymphocytes Variations	876	,025246	,455513

Determinants of hospitalisation stay:

Multiple regression analysis including MiniMNA, and admission CRP, PAB/CRP ratio
Adjusted R2 = ,0180 p< ,004

Variable	β
MiniMNA	**- ,12**
Admission CRP	-,02
Admission PAB/CRP ratio	**- ,09**

Hospital comparisons


28
24
20
16
12
8
4
MNA (points)
4
6
7
9
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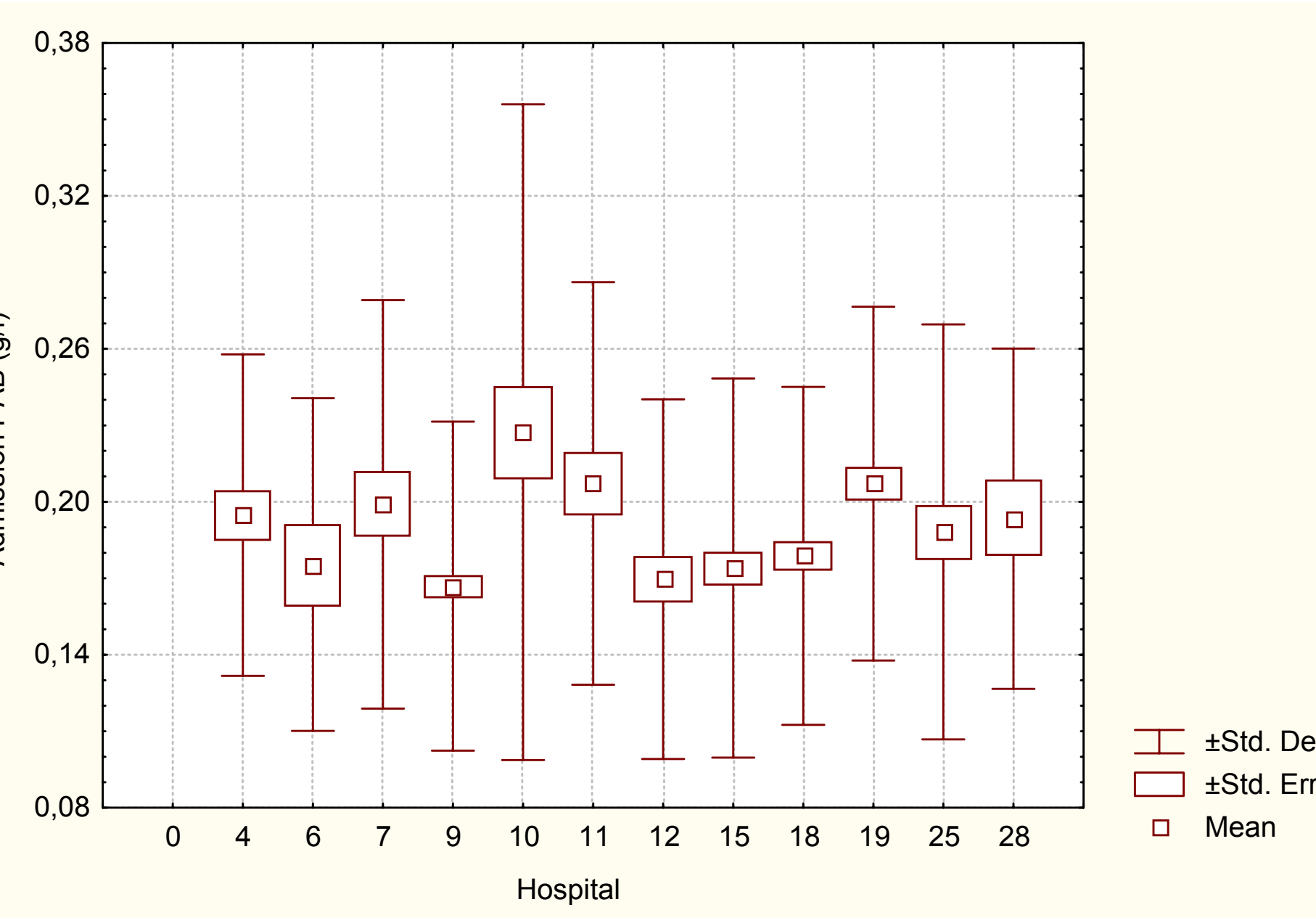
11
12
15
18
19
25
28
Hospital
±Std. Dev
±Std. Err.
Mean


0,38
0,32
0,26
0,20
0,14
0,08
0
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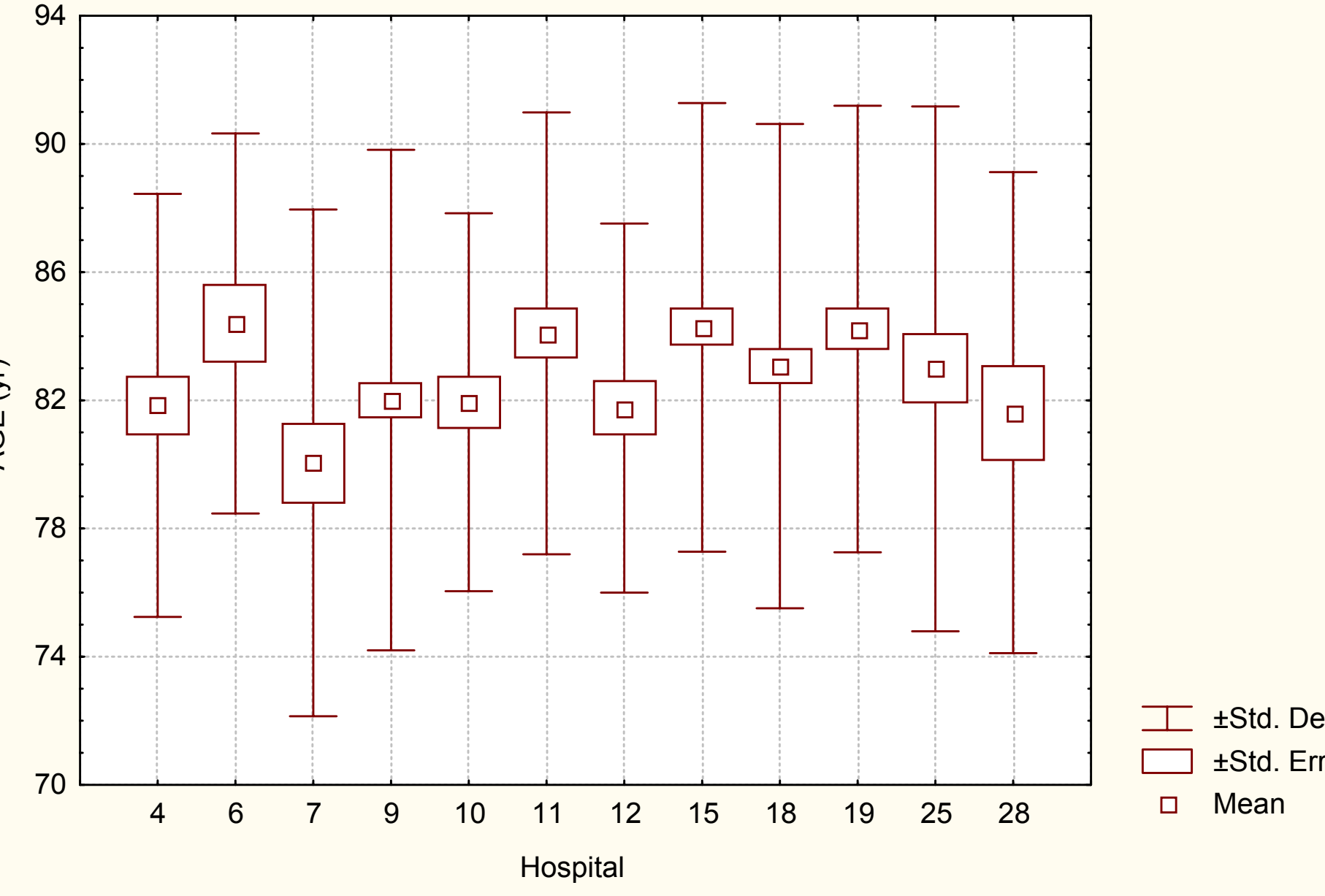
28
Hospital
±Std. De
±Std. Err
Mean


94
90
86
82
78
74
70
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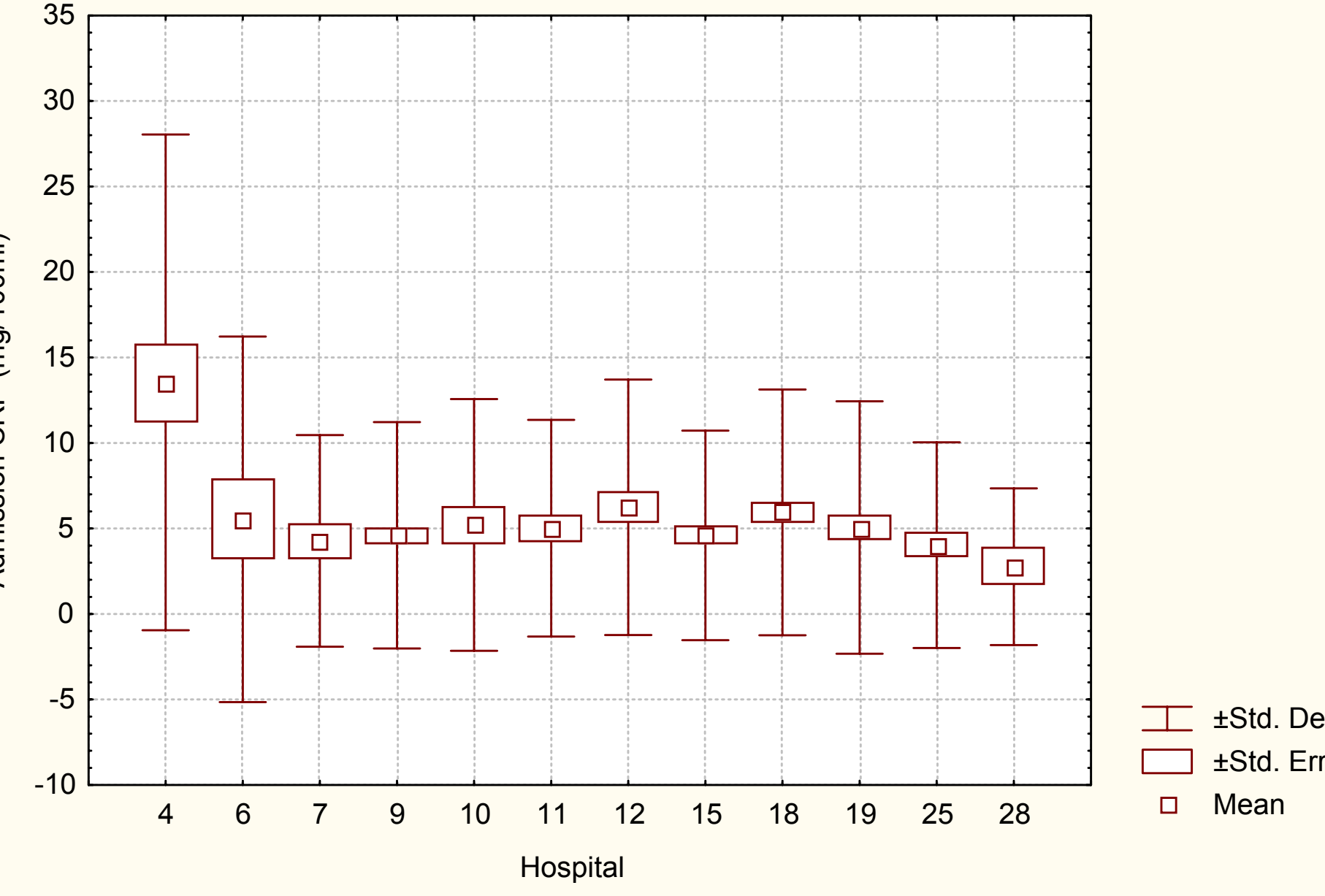
Hospital
±Std. De
±Std. Err
Mean


35
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28
Hospital
±Std. De
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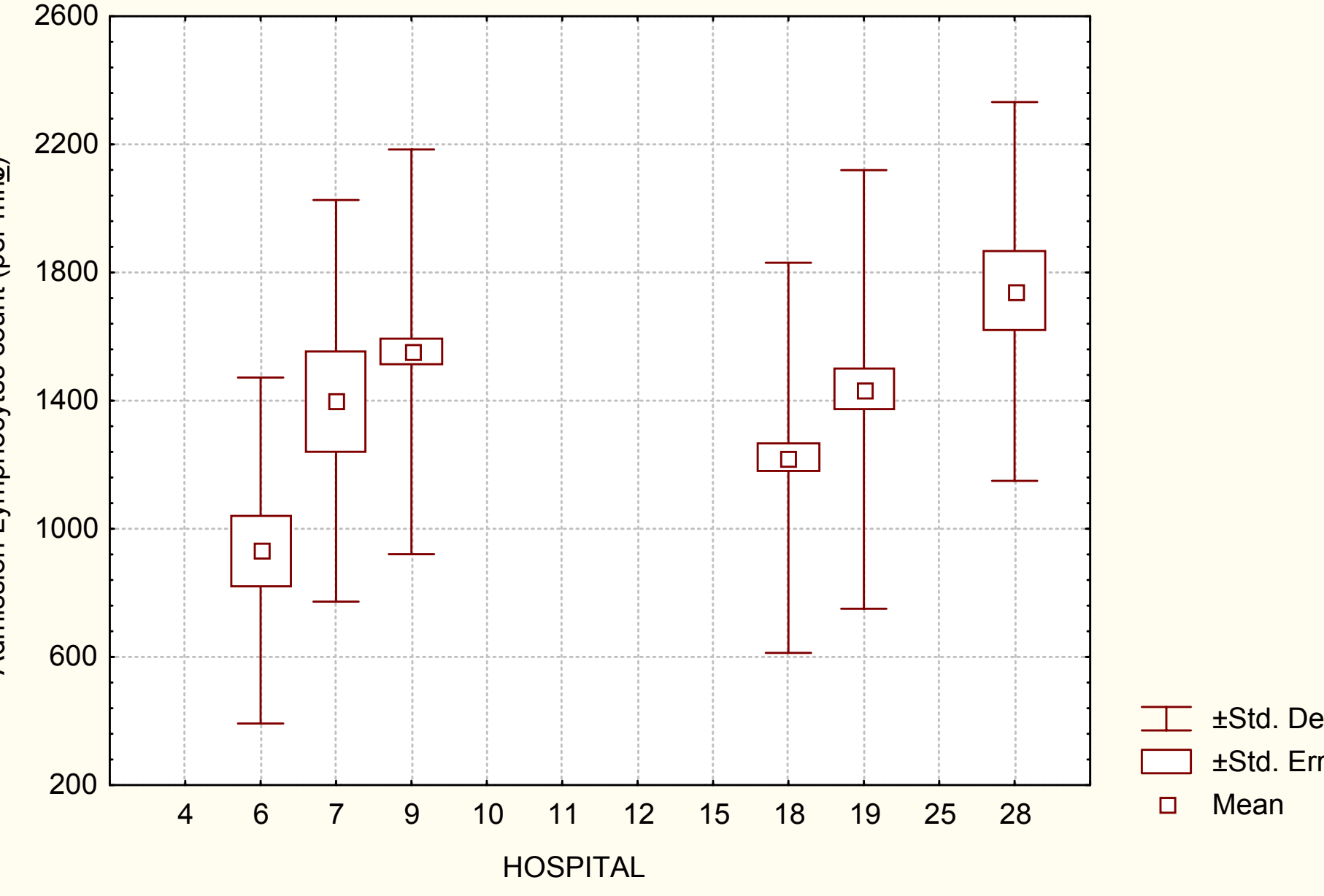
Mean


2600
2200
1800
1400
1000
600
200
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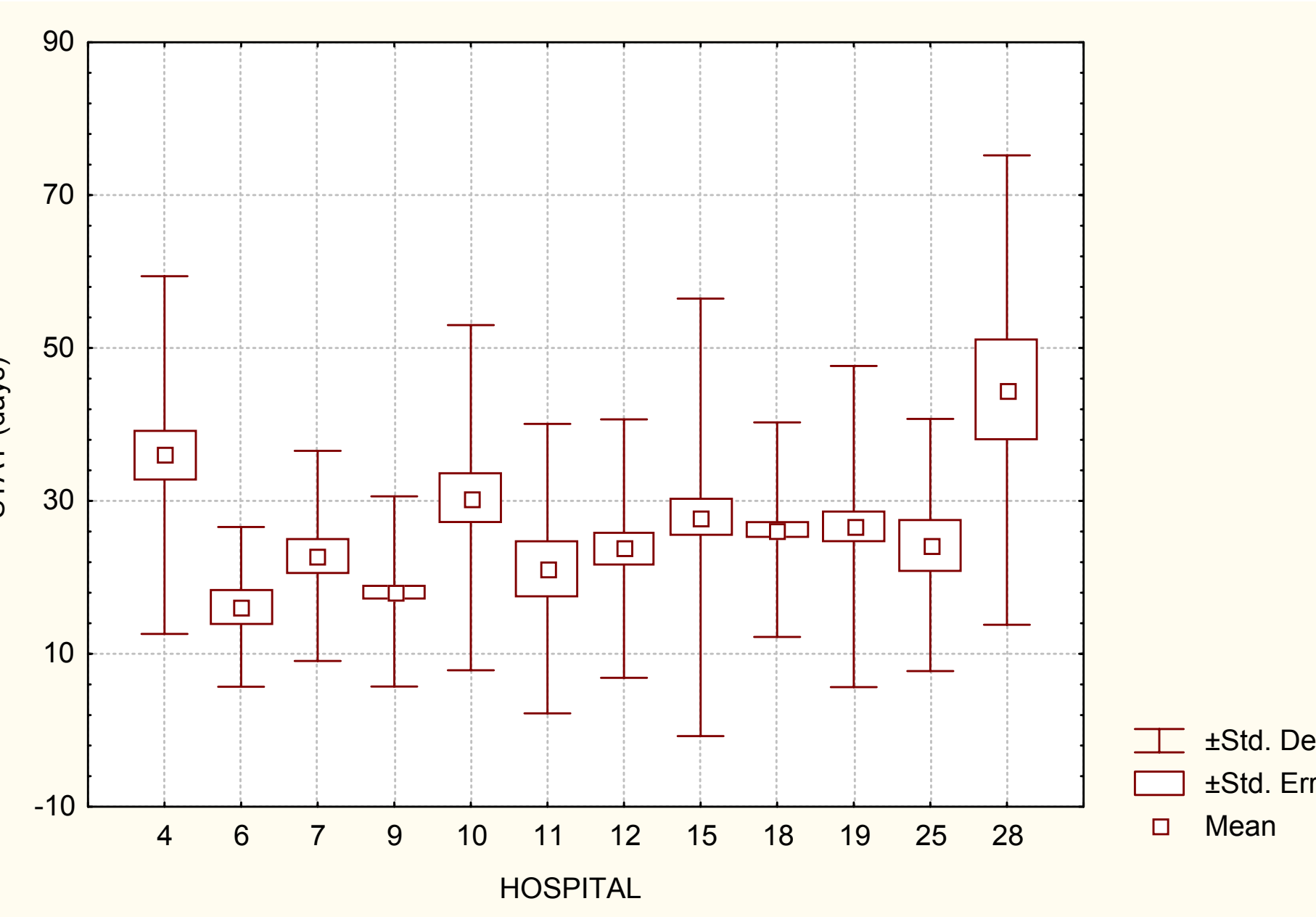
28
HOSPITAL
±Std. De
±Std. Err
Mean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70
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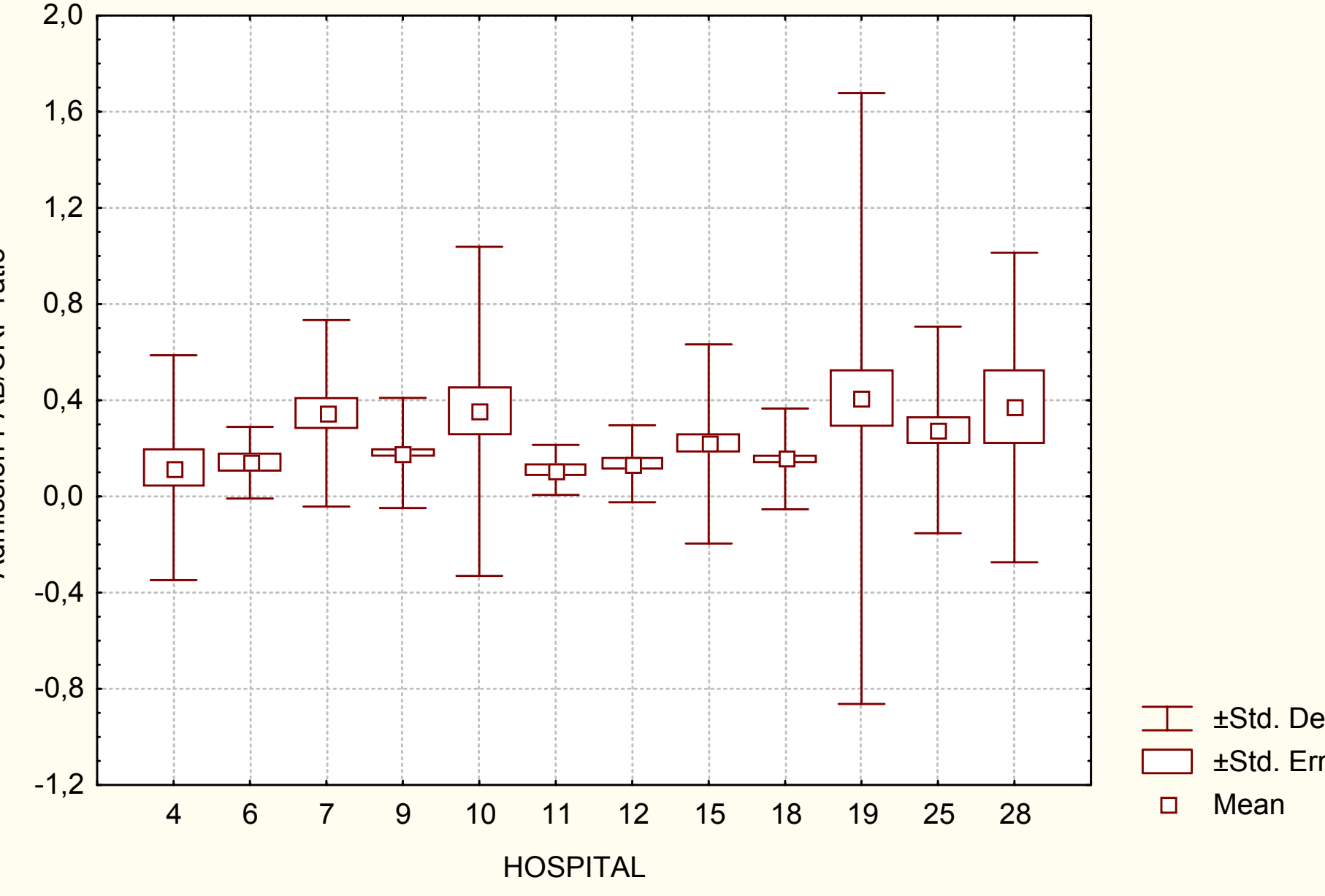
Mean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1,6
1,2
0,8
0,4
0,0
-0,4
-0,8
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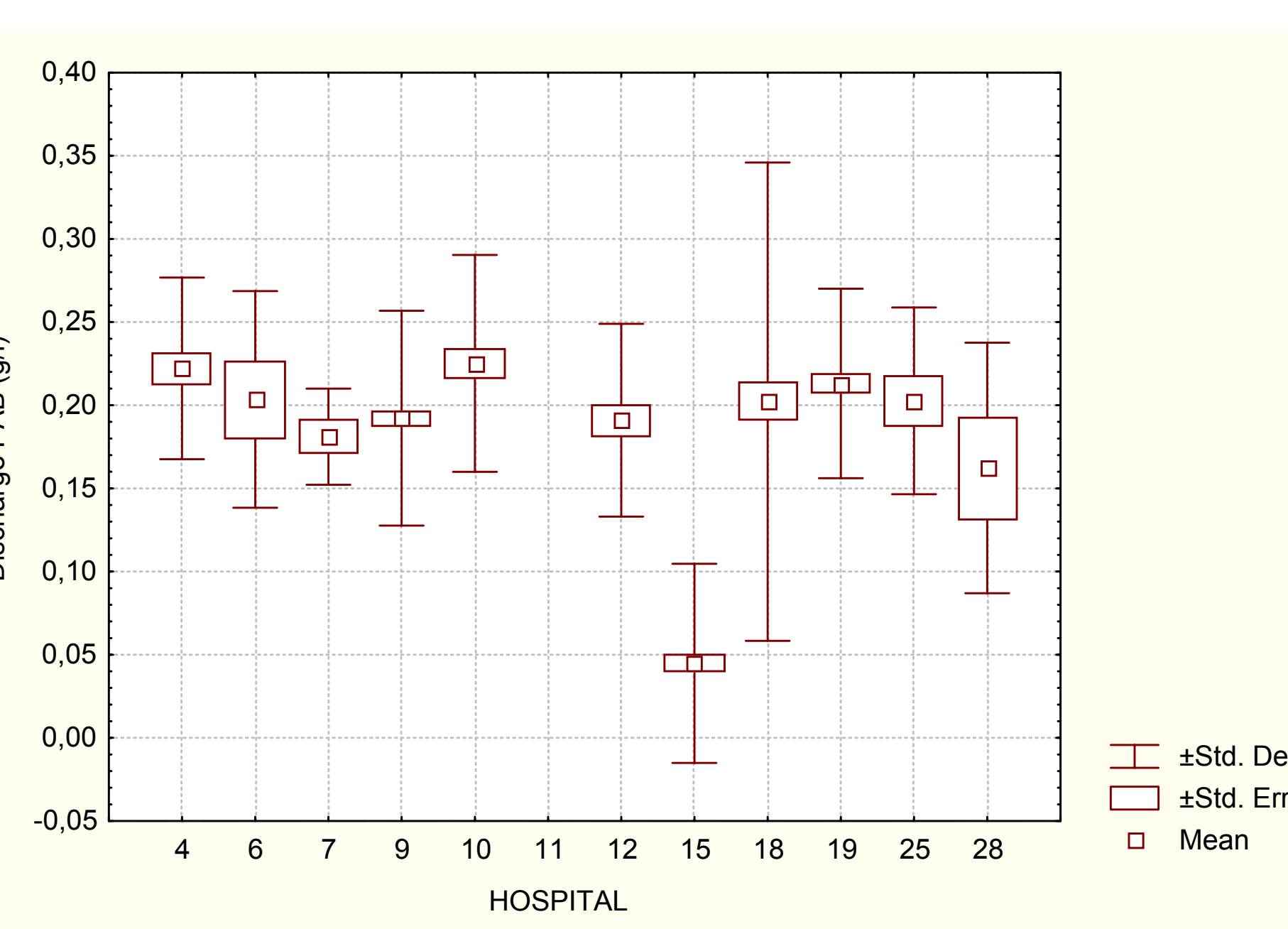
HOSPITAL
±Std. De
±Std. Err
Mean

Discharge parameters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0,35
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0,20
0,15
0,10
0,05
0,00
-0,05
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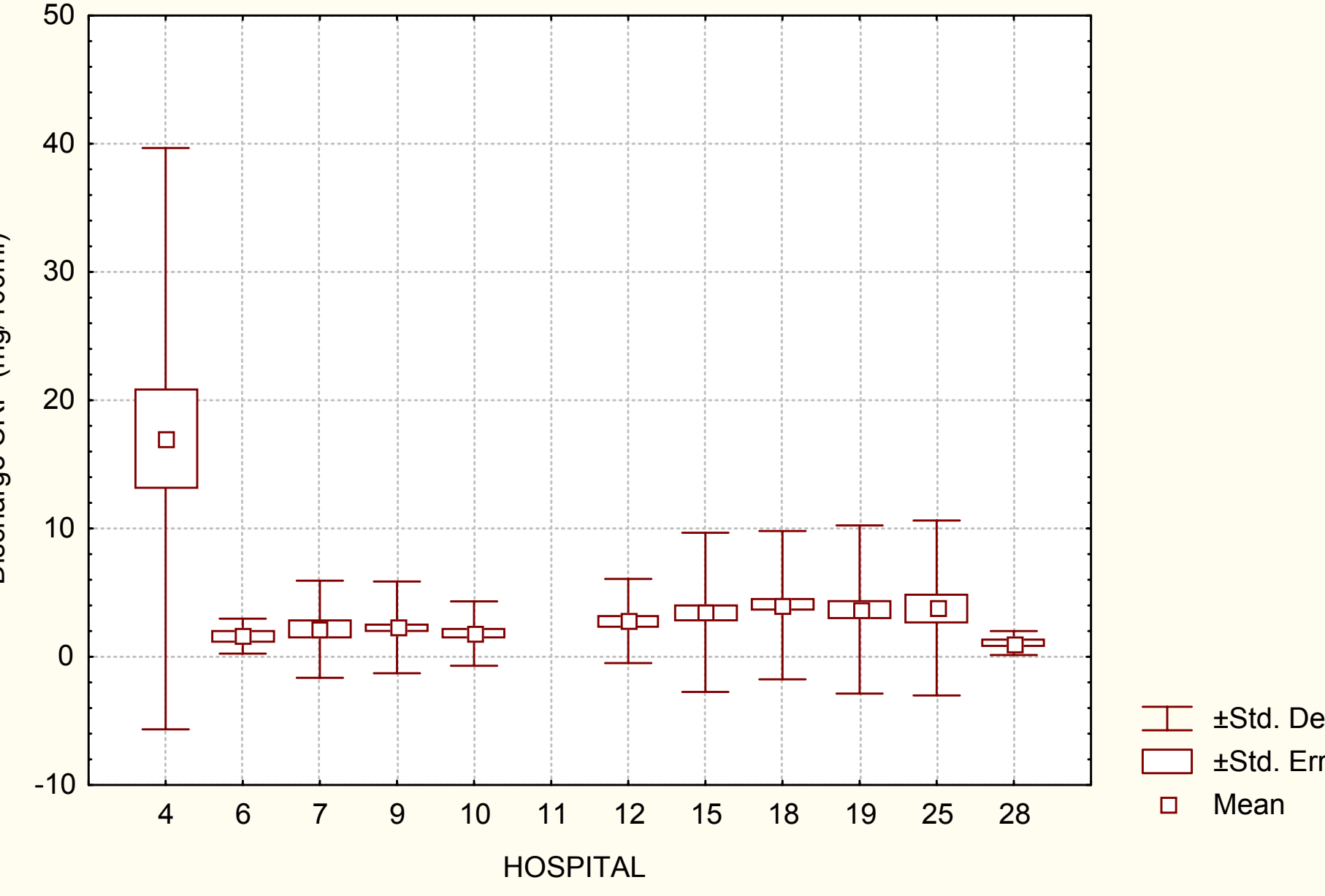
HOSPITAL
±Std. De
±Std. Err
Mean


50
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-10
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HOSPITAL
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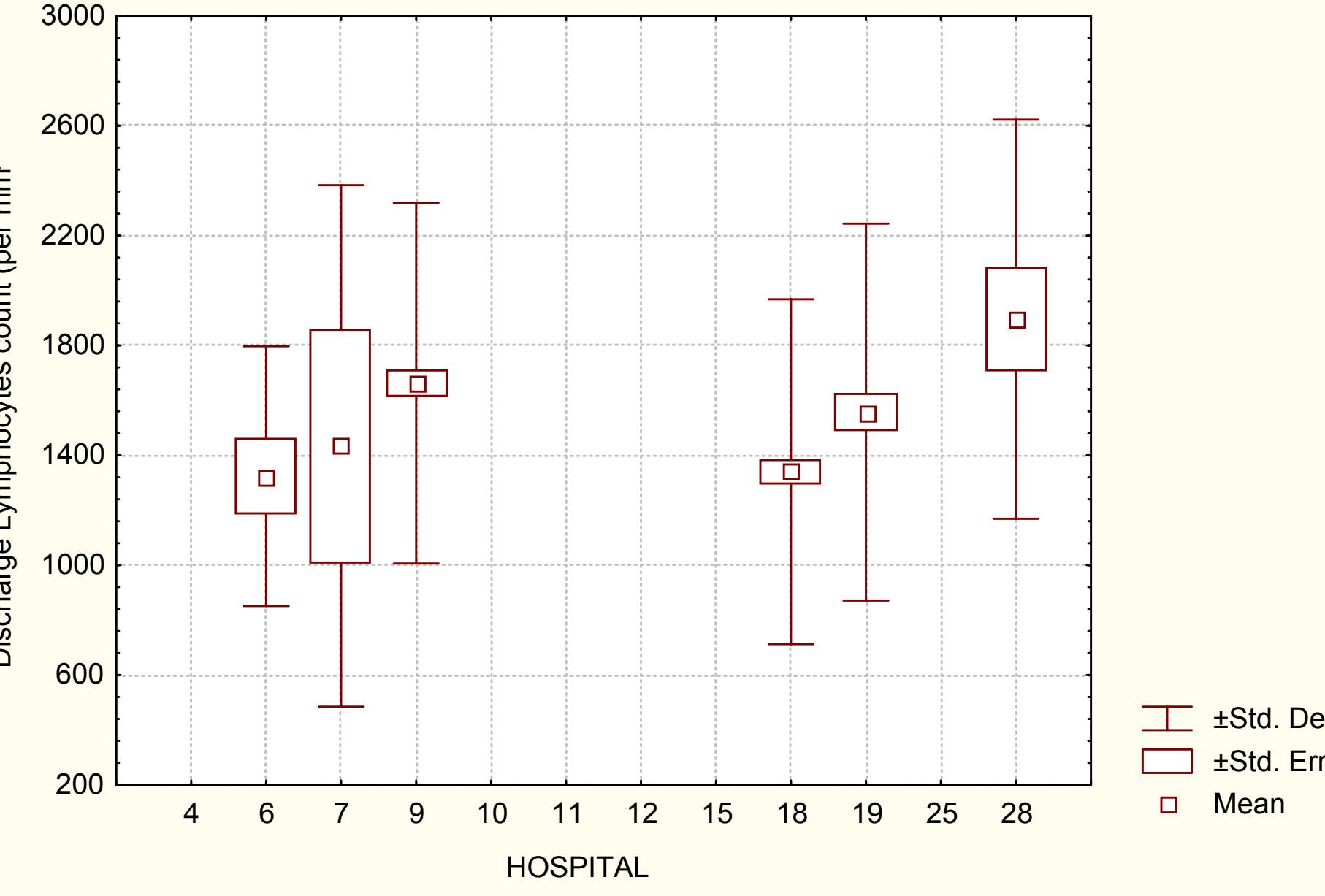
Mean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HOSPITAL
±Std. De
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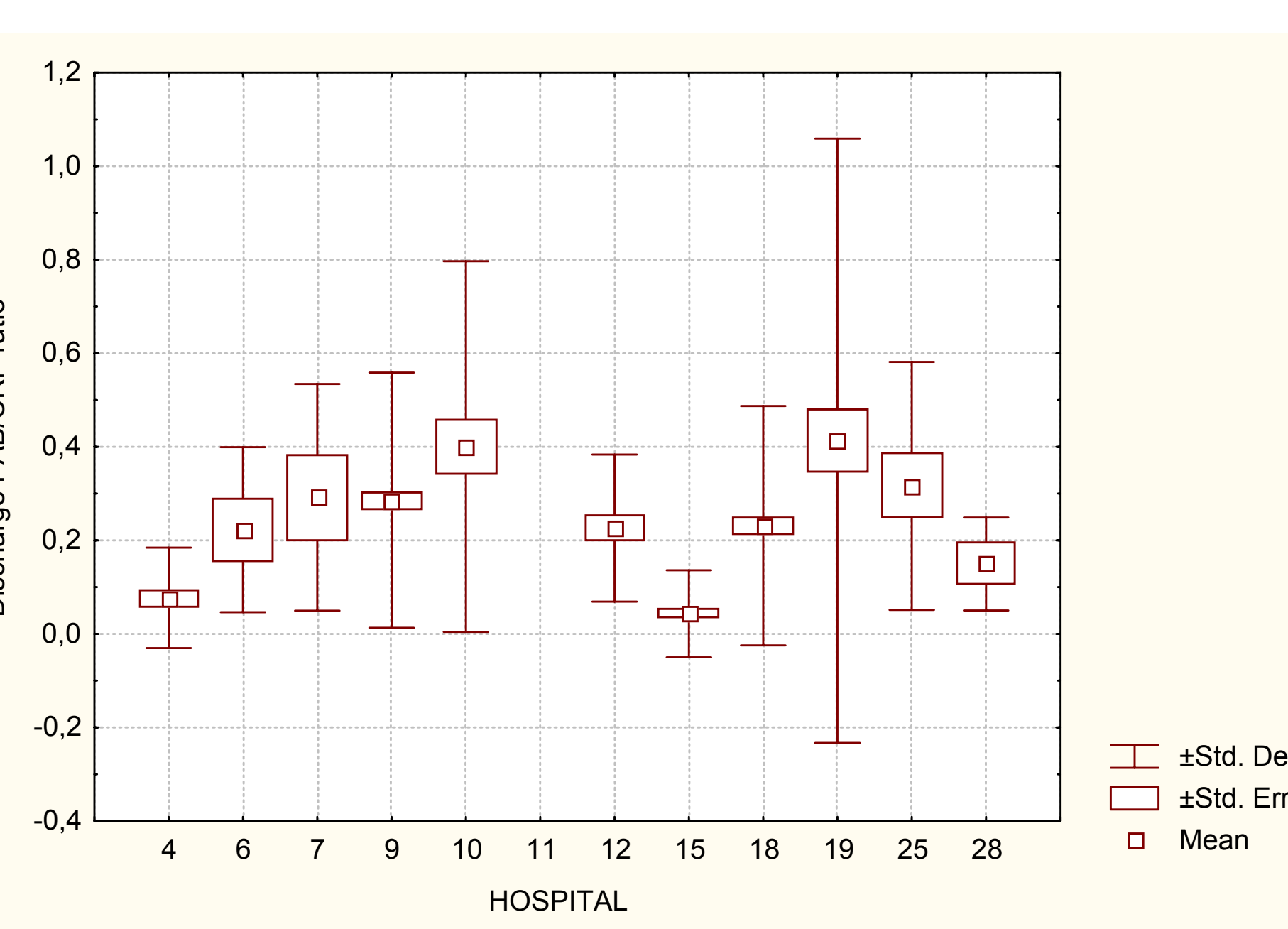
Mean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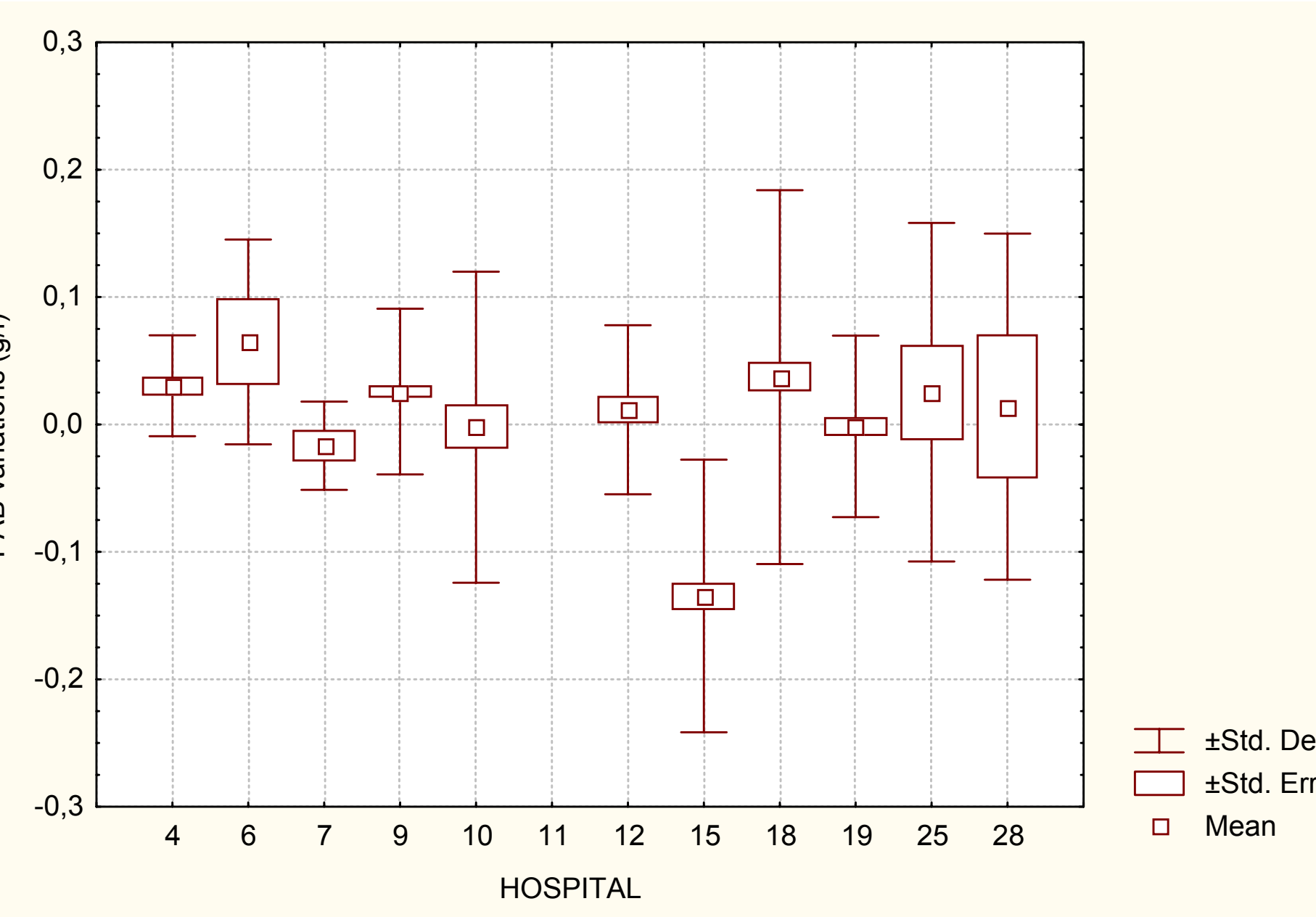
HOSPITAL
±Std. De
±Std. Err
Mean

Parameters variations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0,2
0,1
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-0,1
-0,2
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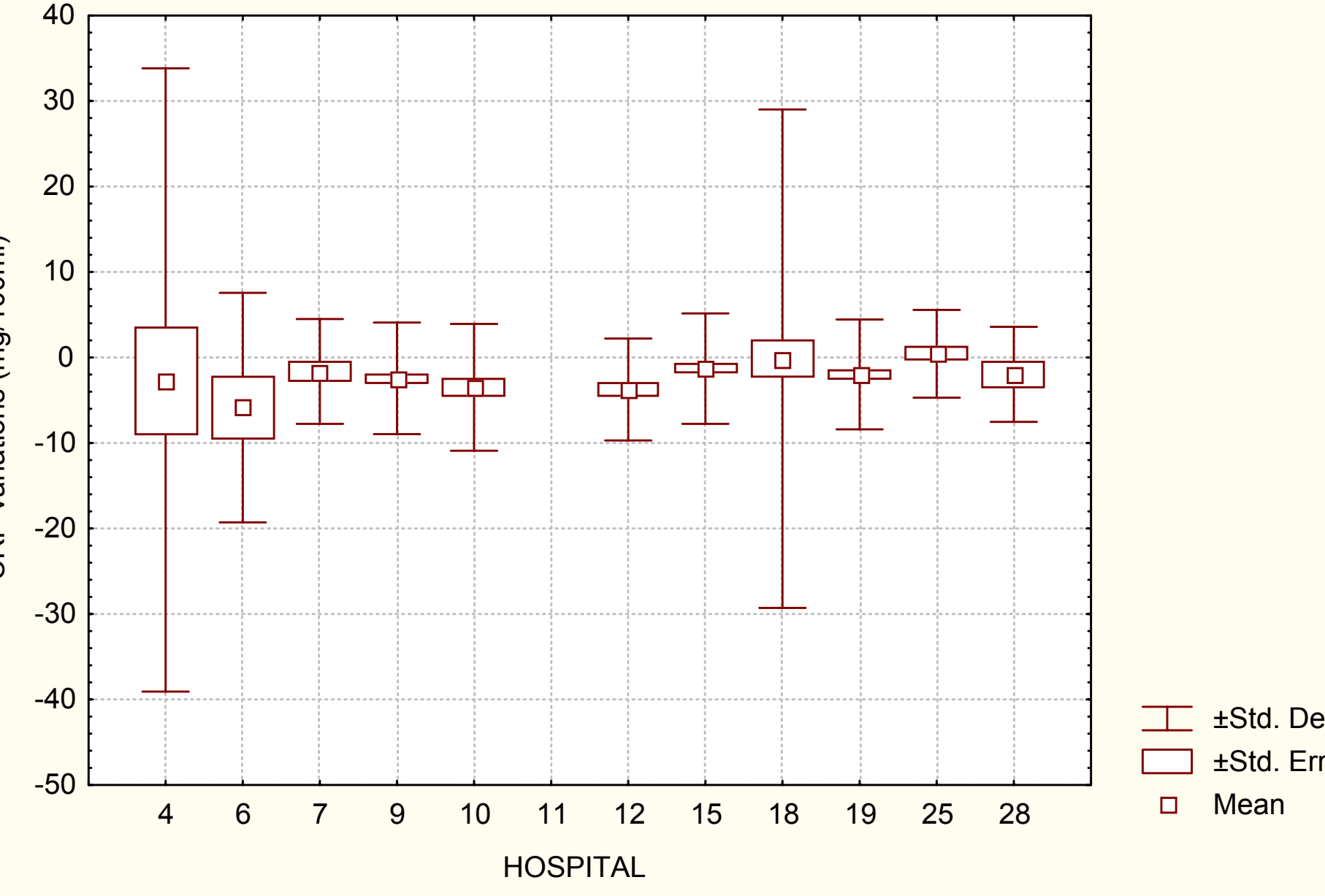
HOSPITAL
±Std. De
±Std. Err
Mean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HOSPITAL
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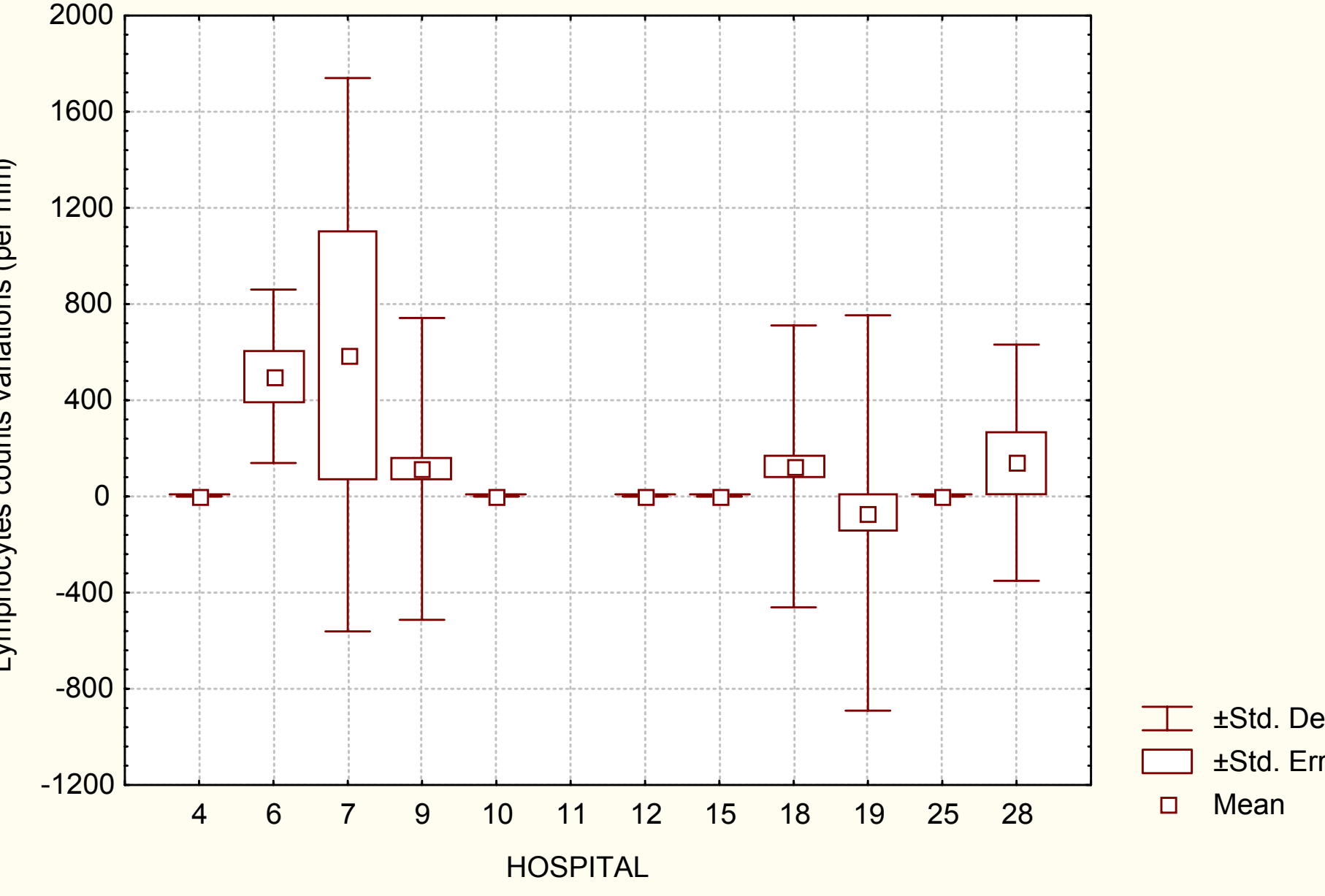
Mean


2000
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1200
800
400
0
-400
-800
-1200
Lymphocytes counts variations (per mm)
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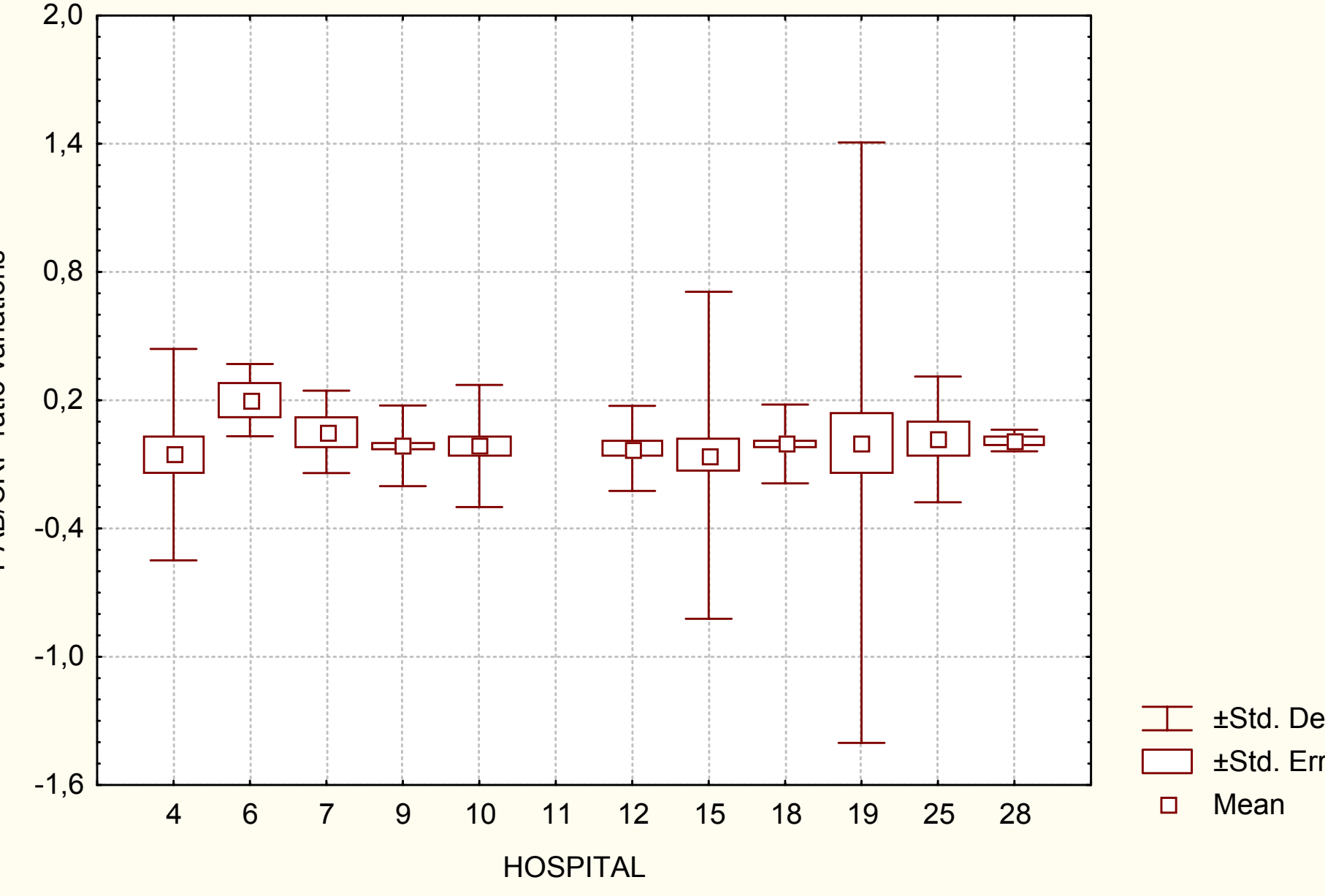
HOSPITAL
±Std. De
±Std. Err
Mean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HOSPITAL
±Std. De
±Std. Err
Mean

Conclusions

Conclusions

- High prevalence of malnutrition among geriatric hospitalized patients
- Significant decreased hospitalization stay during 2nd phase (Confounding factor?)
- Significant decreased PAB concentrations at discharge during the first phase whereas PAB did not decrease during the 2nd phase

Conclusions

- By multiple regression analysis, hospitalization stay is determined by admission PAB/CRP (inverse correlation) and Mini-MNA
- Quite homogeneous hospital data distribution
- Data comparable with those of medical literature