XI congresso nazionale

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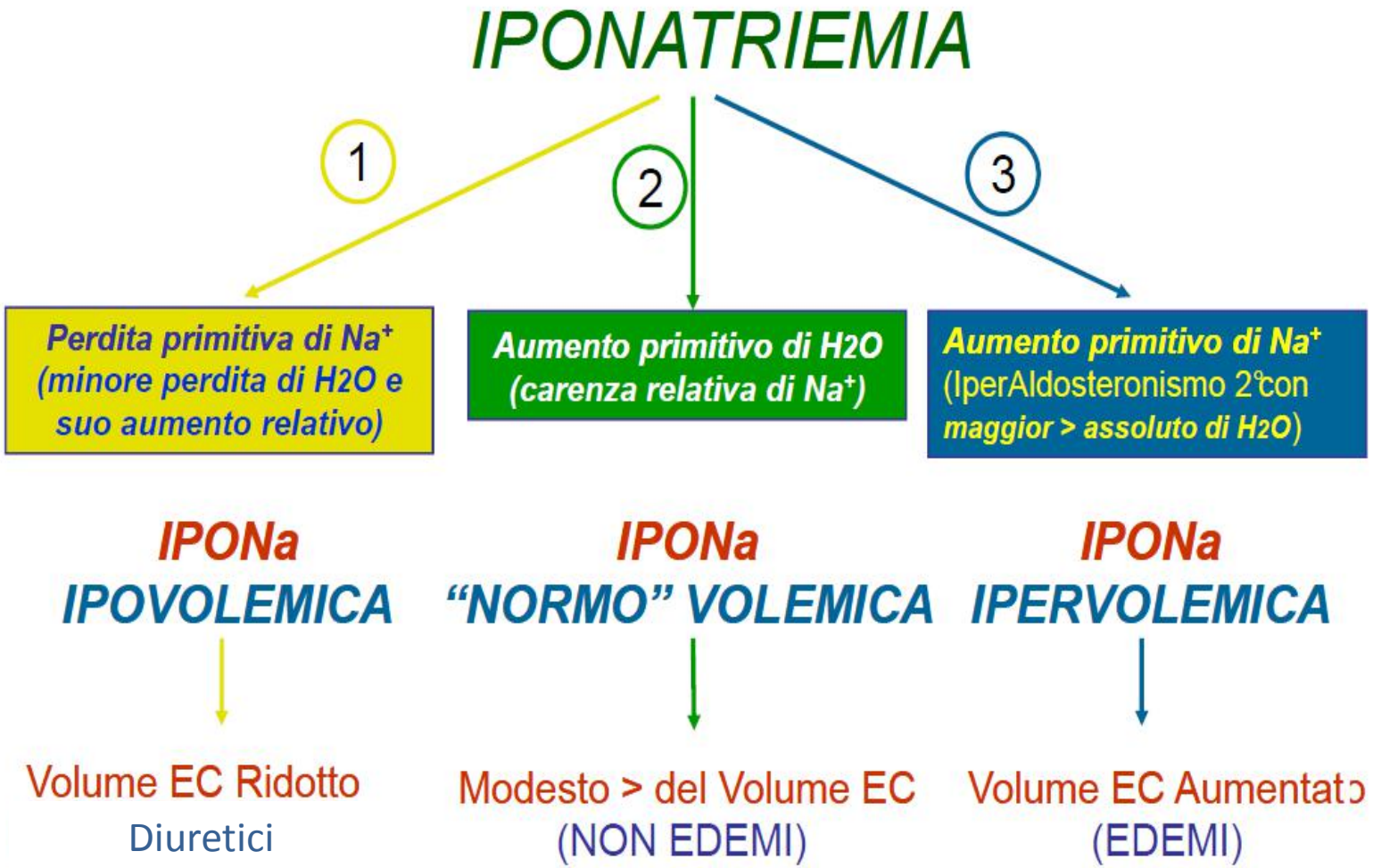
ROMA 24-26 MAGGIO 2018

Università degli Studi della Campania *Luigi Vanvitelli*

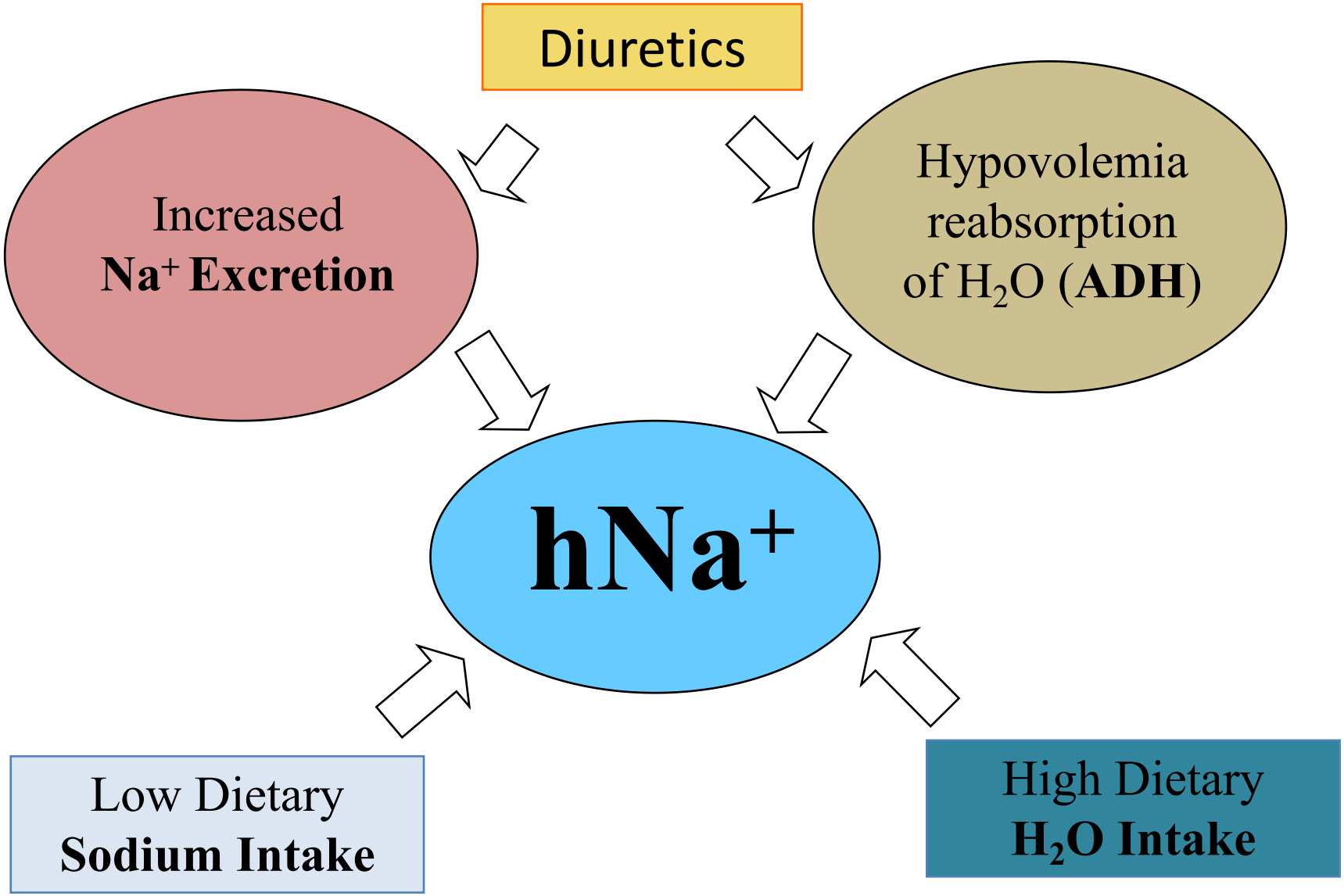
La Correzione dell'Iponatriemia in Urgenza: Velocità vs Degenza

Mauro Giordano

26 maggio 2018


IPONATRIEMIA
1
2
3
Perdita primitiva di Na+ (minore perdita di H2O e suo aumento relativo)
Aumento primitivo di H2O (carenza relativa di Na+)
Aumento primitivo di Na+ (IperAldosteronismo 2° con maggior > assoluto di H2O)
IPONa IPOVOLEMICA
IPONa "NORMO" VOLEMICA
IPONa IPERVOLEMICA
Volume EC Ridotto
Diuretici
Modesto > del Volume EC
(NON EDEMI)
Volume EC Aumentato
(EDEMI)

GENESIS OF HYPONATREMIA

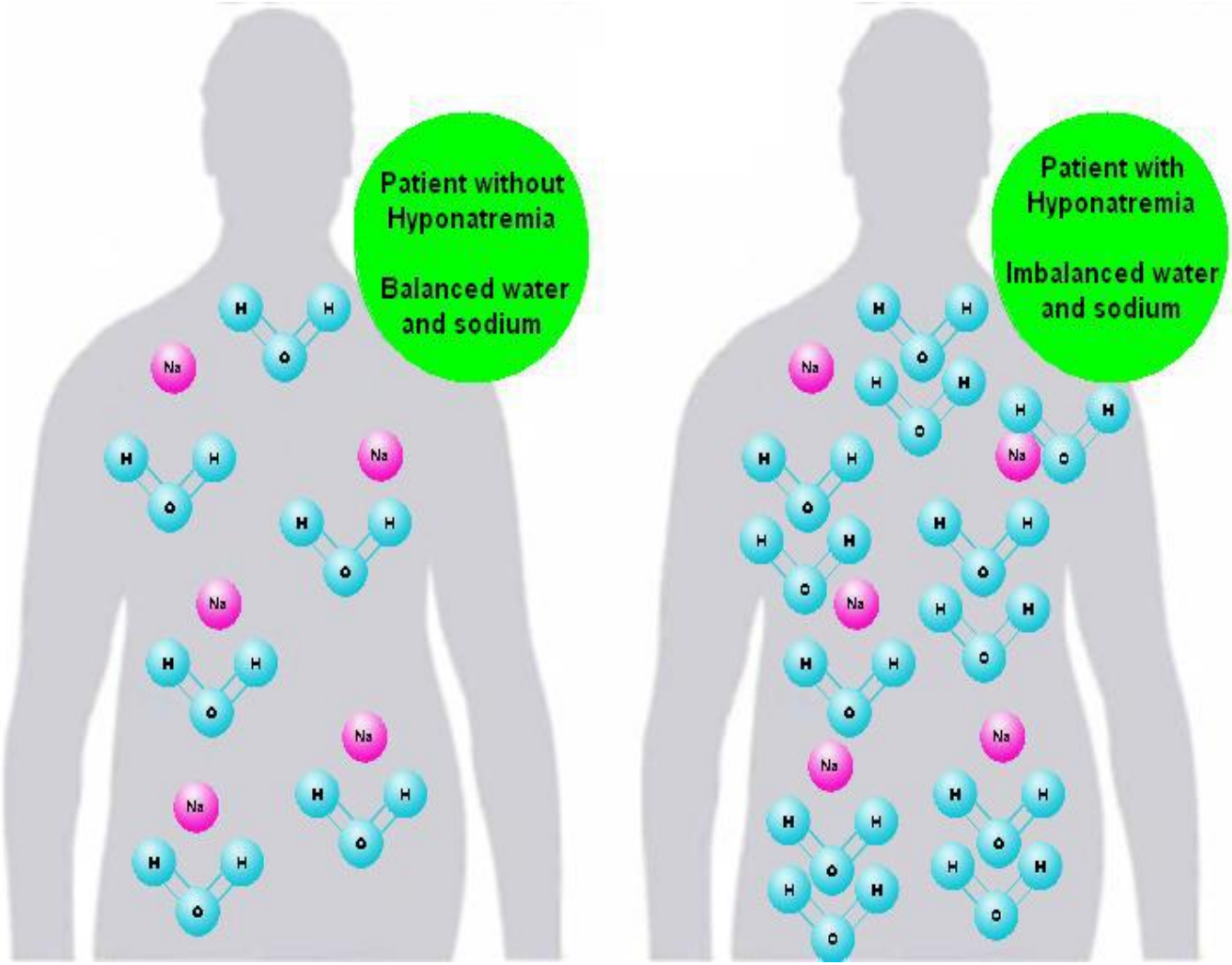


Ashraf N, Am J Med 1981

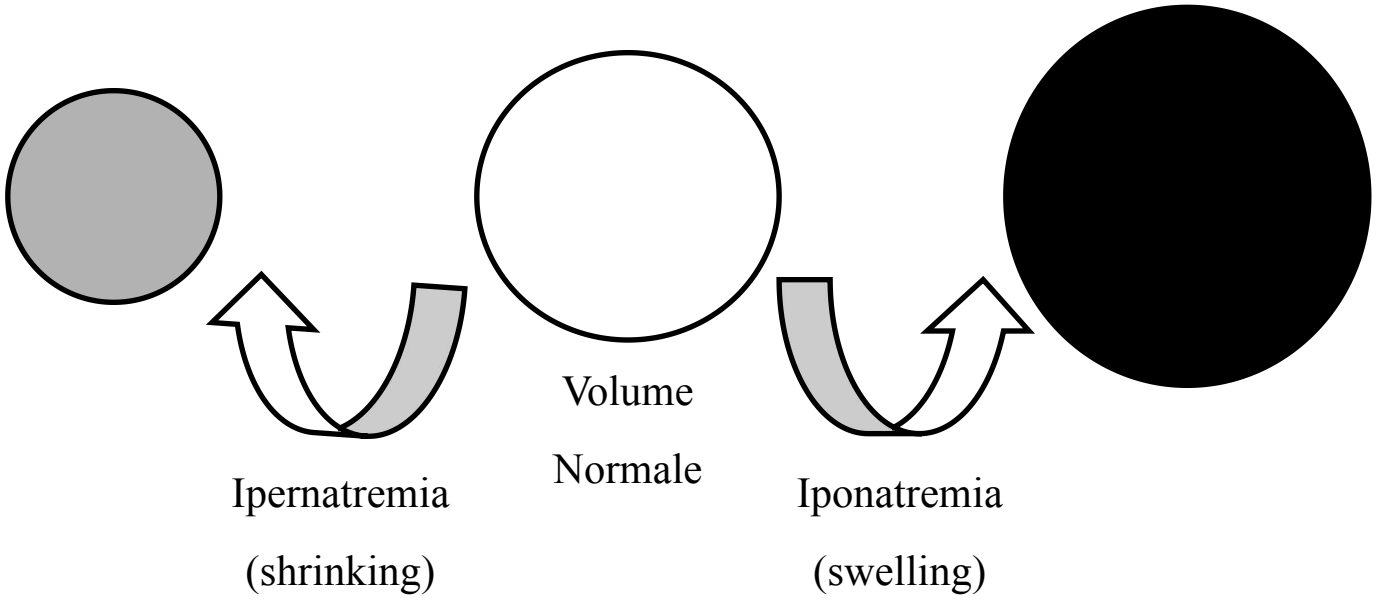
Hyponatremia

< 60% water

> 60% water



Stress Osmotico della Cellula Cerebrale



IPONATREMIA

LIEVE (135-130 mmol/l)	MODERATA (129-120 mmol/l)	SEVERA (< 120 mmol/l)
Asintomatico	Astenia marcata	Ottundimento
Astenia lieve	Cefalea	Allucinazioni
Vertigini	Nausea	Epilessia
	Vomito	Coma

Respiro di
Cheyne-Stokes

Iperpnea Apnea

R.A. DeFronzo 95

Gerontology

Clinical Section / Short Communication

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Age-Related Variety in Electrolyte Levels and Prevalence of Dysnatremias and Dyskalemias in Patients Presenting to the Emergency Department

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Georg M. Fiedler[b] Aristomenis K. Exadaktylos[a]

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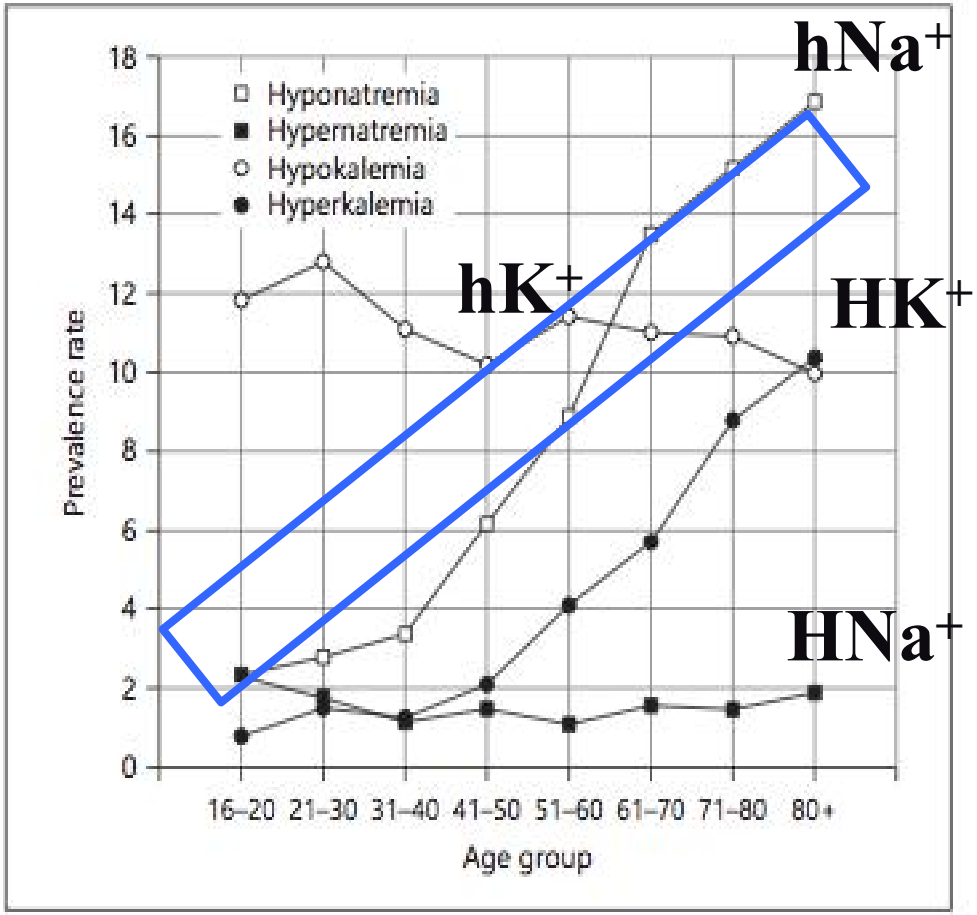

Fig. 1. Prevalence rates of dysnatremias and dyskalemias stratified for age group.

American Journal of Emergency Medicine 34 (2016) 1923–1926

Contents lists available at ScienceDirect

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Original Contribution

Diseases associated with electrolyte imbalance in the ED: age-related differences

Mauro Giordano, MD [a,*], Tiziana Ciarambino, MD [a], Pietro Castellino, MD [b], Lorenzo Malatino, MD [b], Salvatore Di Somma, MD [c], Gianni Biolo, MD [d], Giuseppe Paolisso, MD [a], Luigi Elio Adinolfi, MD [a]

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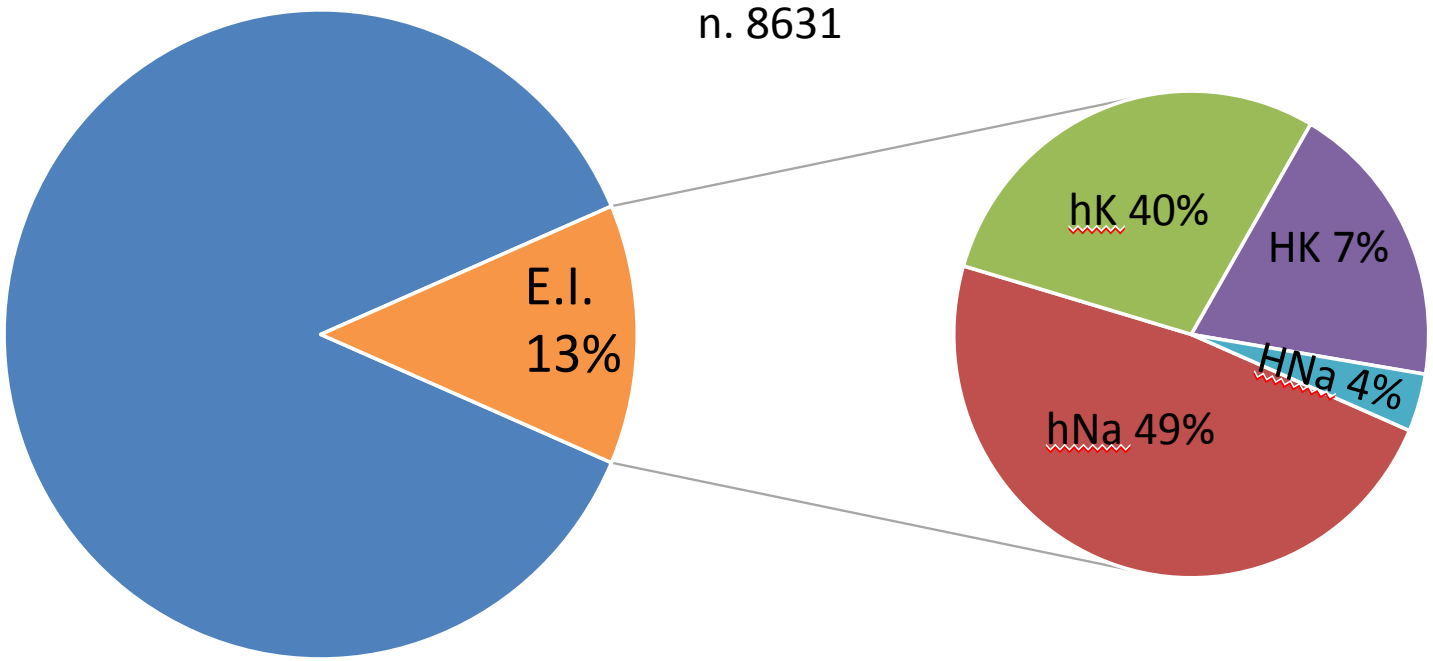

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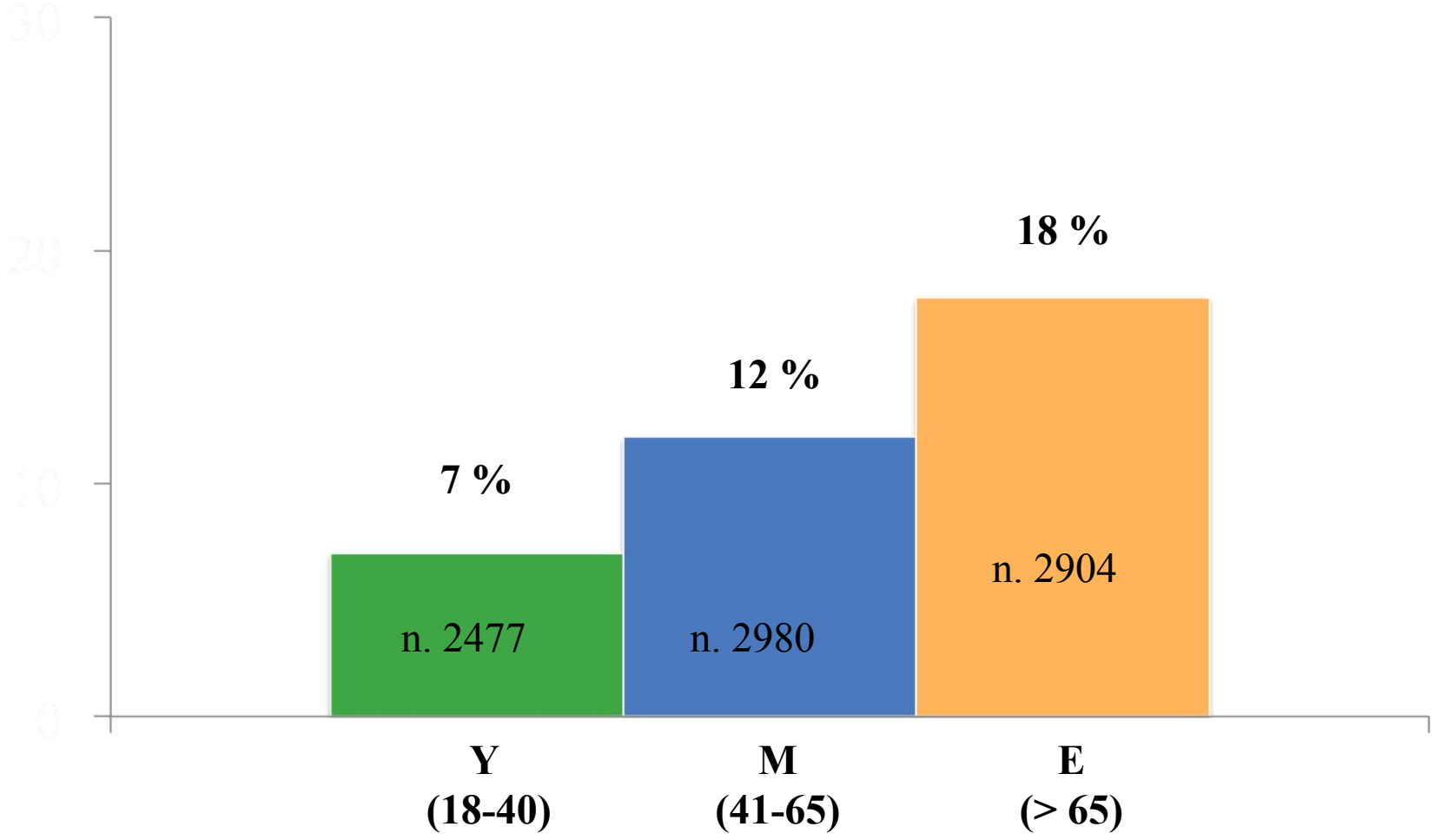
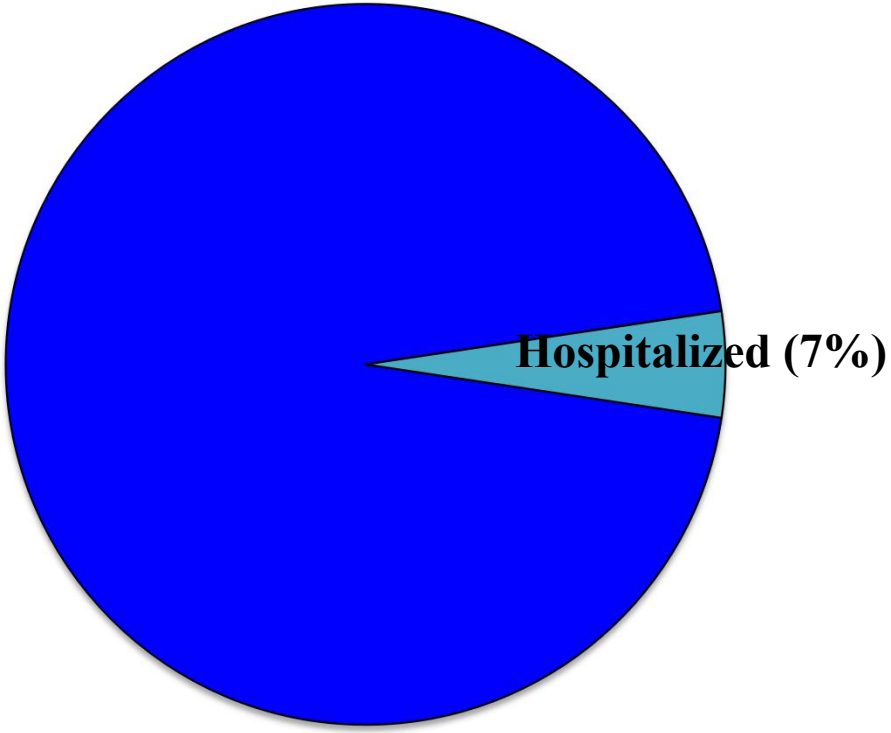
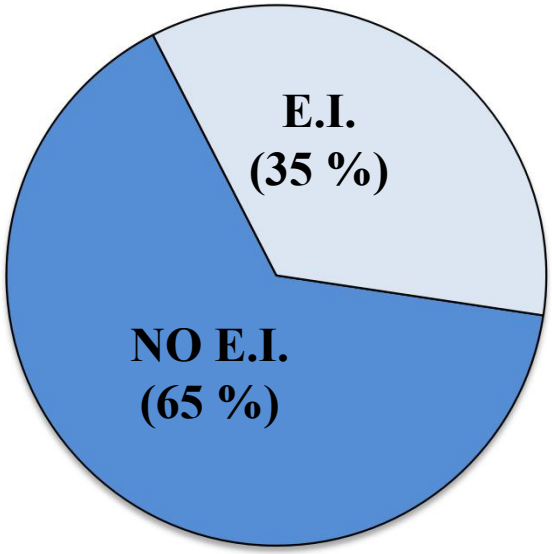
AGE RELATED PREVALANCE OF ELECTROLYTE IMBALANCE IN E.D.



Giordano M. et al.; Am J Em Med 2016

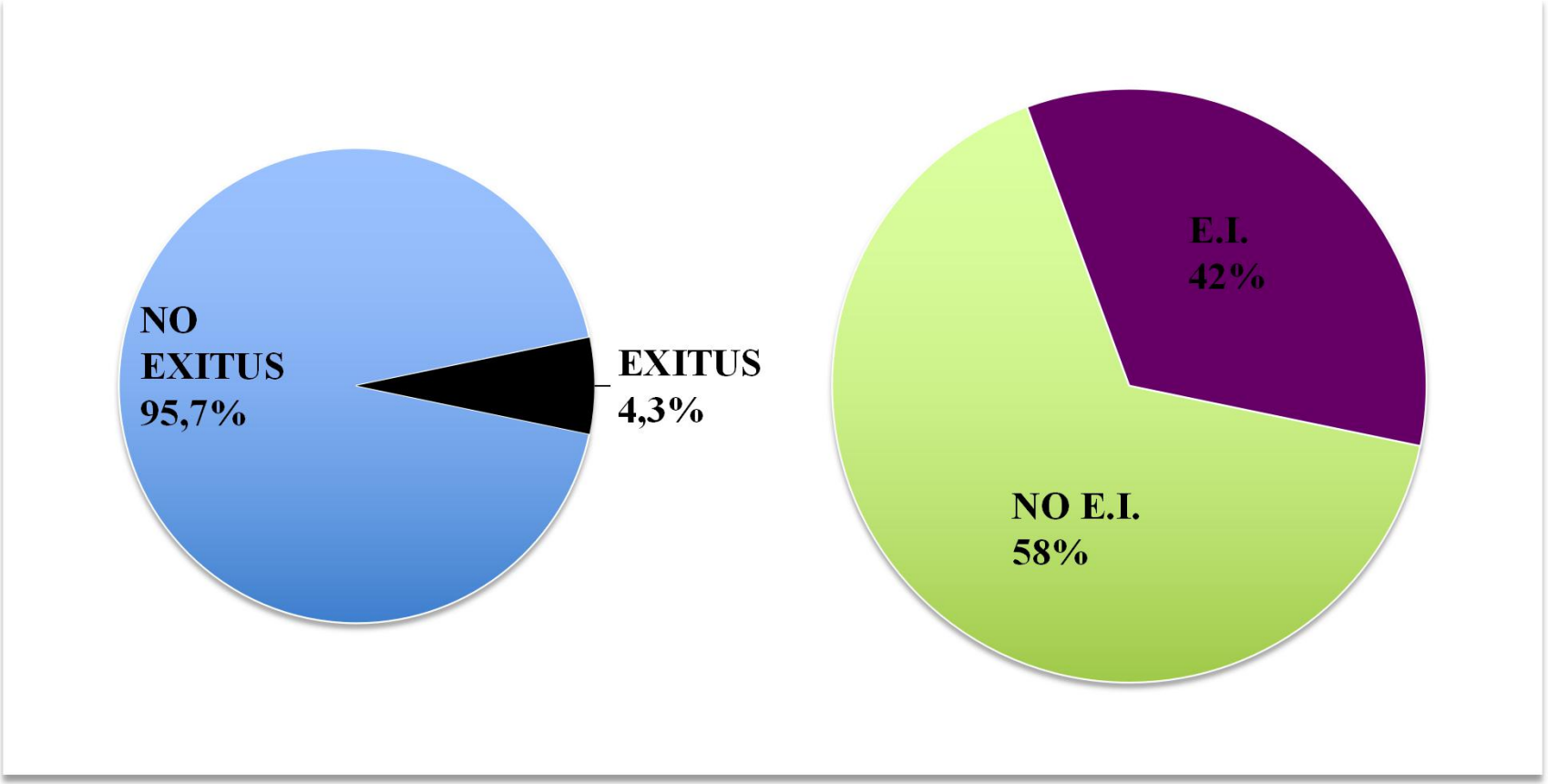
PREVALANCE OF ELECTROLYTE IMBALANCE IN HOSPITALIZED PATIENTS





Giordano M. et al.; Am J Em Med 2016

PREVALANCE OF ELECTROLYTE IMBALANCE IN EXITUS



Giordano M. et al.; Am J Em Med 2016

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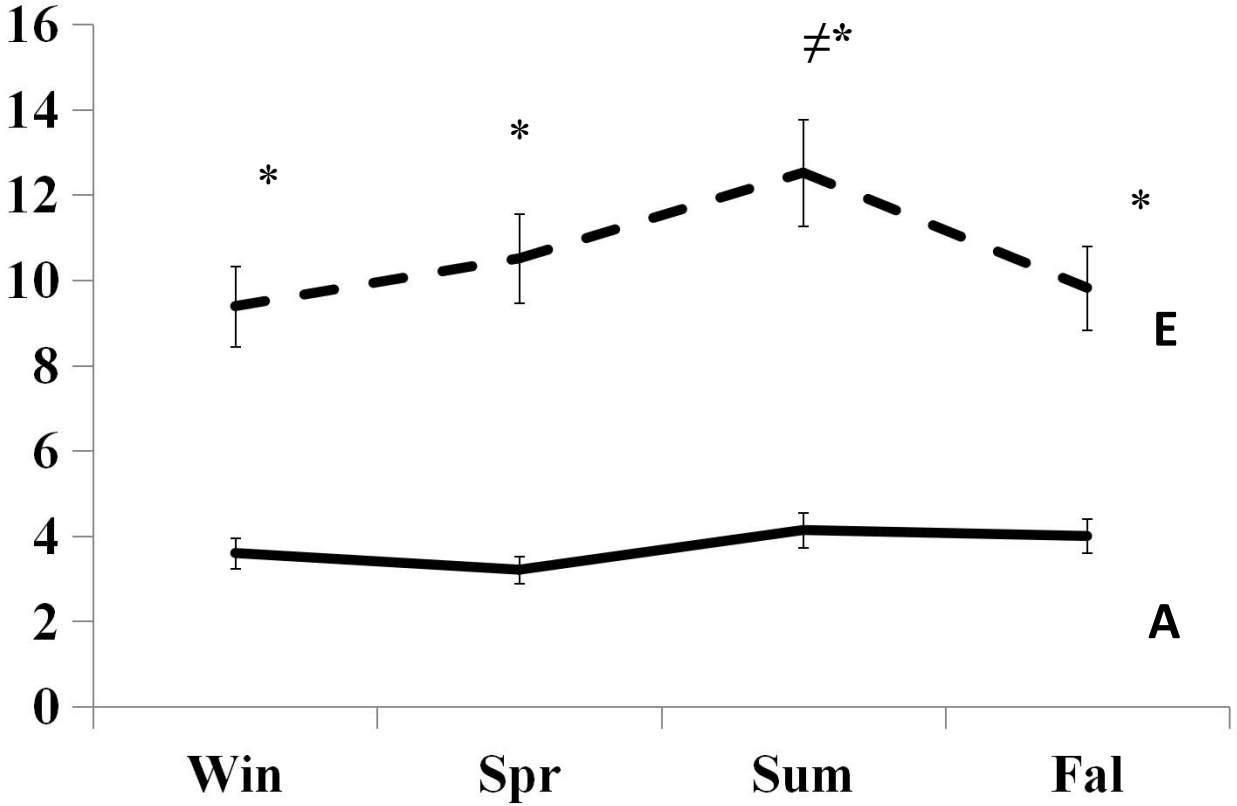
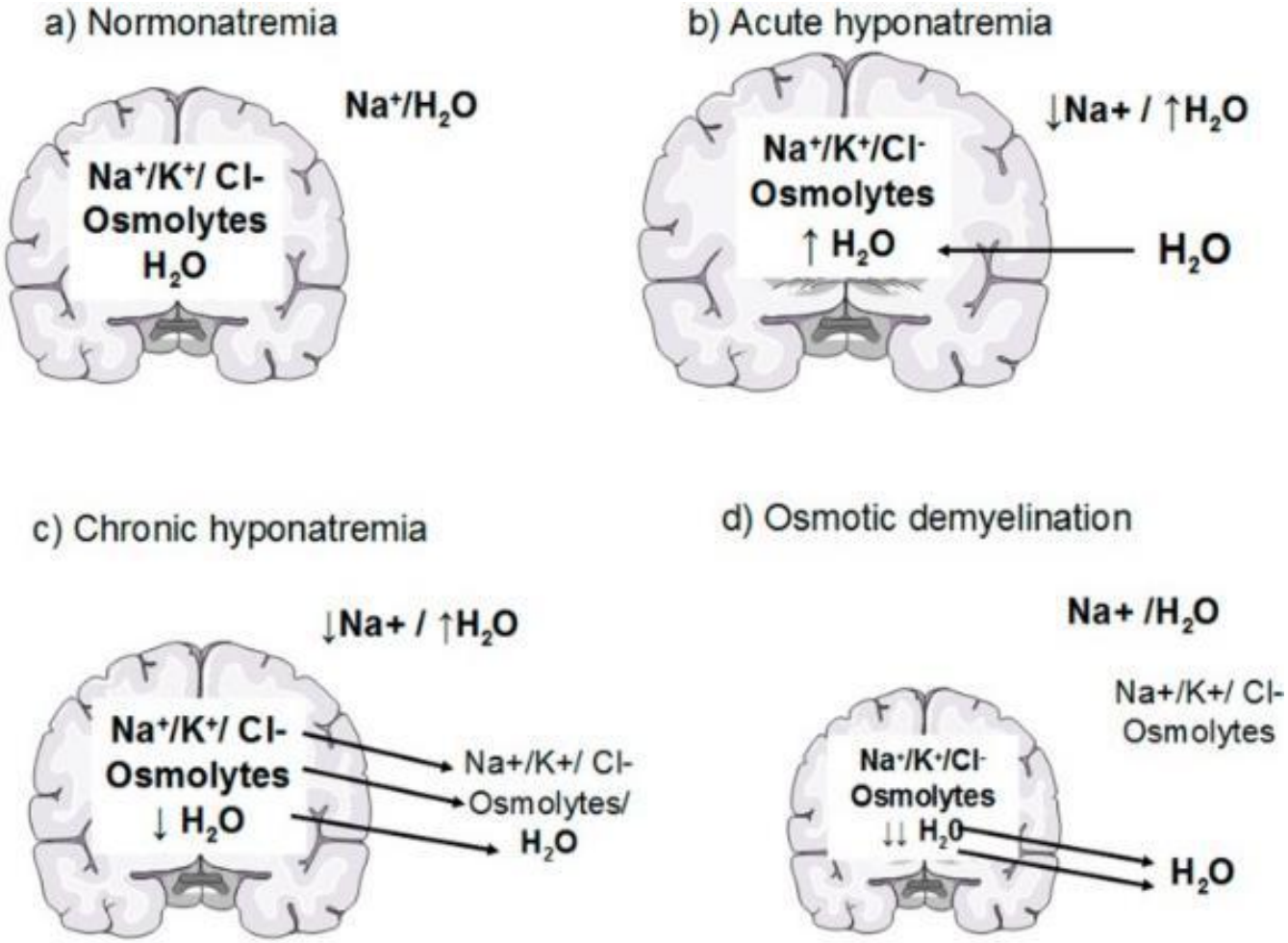
Seasonal variations of hyponatremia in the emergency department: Age-related changes

Mauro Giordano, MD [a,*], Tiziana Ciarambino, MD [a], Pietro Castellino, MD [b], Lorenzo Malatino, MD [b], Alessandro Cataliotti, MD [c], Luca Rinaldi, MD [a], Giuseppe Paolisso, MD [a], Luigi Elio Adinolfi, MD [a]

[a] Department of Medical, Surgical, Neurological, Metabolic and Geriatrics Sciences, University of Campania "L. Vanvitelli", Italy
[b] Department of Clinical and Experimental Medicine, University of Catania, Catania, Italy
[c] Institute for Experimental Medical Research, Oslo University, Oslo, Norway



Trattamento
Acuto vs Cronico



Adrogue HJ, NEJM 2000

IPONATREMIA
Terapia

Si consiglia di correggere la sodiemia ad una **velocità < 0.5 mmol/h.**

Una correzione del sodio **> 20 mmol/l in 24 h** è associata ad una aumentato rischio di **mielinolisi pontina (sindrome demielinizzazione osmotica).**

Adrogue N Engl J Med. 00

Correzione dell'iponatriemia

Non più di:

- 10-12 mEq nelle prime 24 h
- 18 mEq in 48 h
- Pericolo di *"Sindrome da demielinizzazione osmotica"*
- Non esistono in letteratura studi sulla velocità di correzione *minima* dell'iponatriemia

Clinical practise guidelines on diagnosis and treatment of hyponatraemia NDT 2014

American Journal of Emergency Medicine 35 (2017) 1691–1694

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Serum sodium correction rate and the outcome in severe hyponatremia

Mauro Giordano [a,*], Tiziana Ciarambino [a], Emanuela Lo Priore [a], Pietro Castellino [b], Lorenzo Malatino [b], Alessandro Cataliotti [c], Giuseppe Paolisso [a], Luigi Elio Adinolfi [a]

[a] Department of Medical, Surgical, Neurological, Metabolic and Geriatrics Sciences, University of Campania "L. Vanvitelli", Italy
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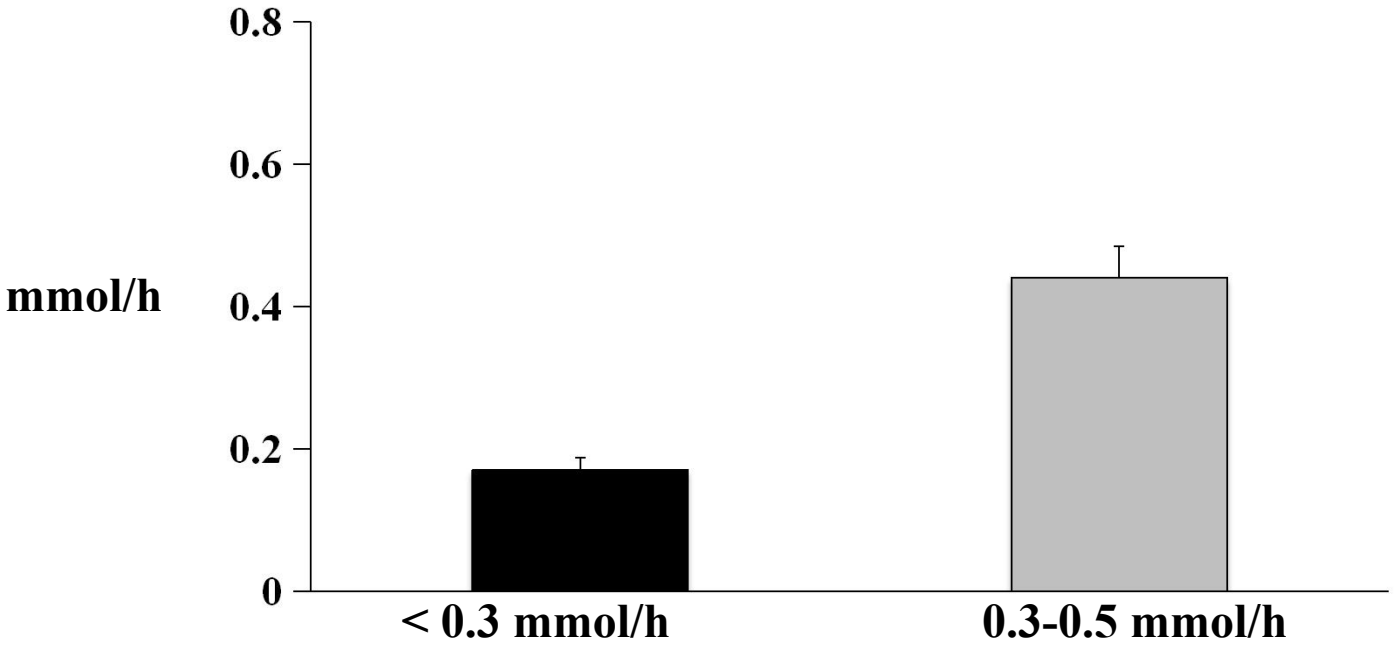
[c] Institute for Experimental Medical Research, Oslo University, Oslo, Norway

Correction Rate of Hyponatremia



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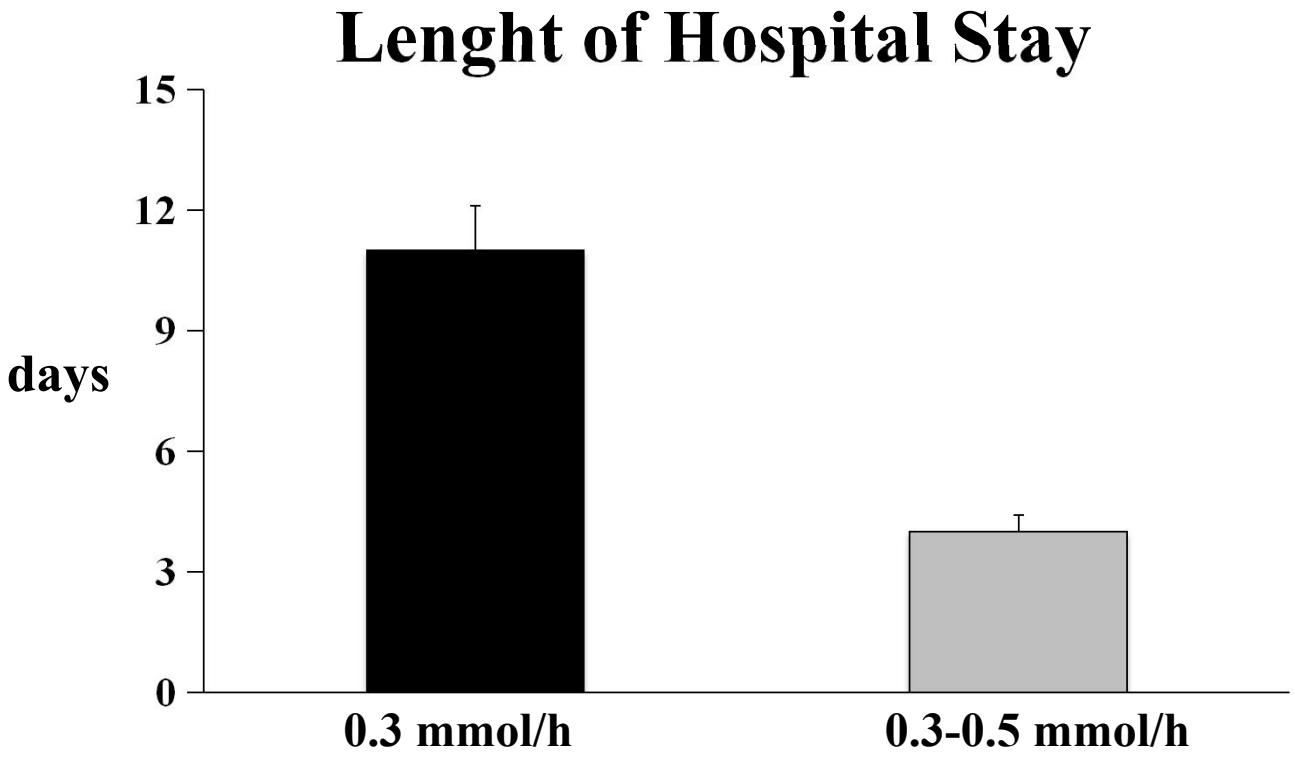

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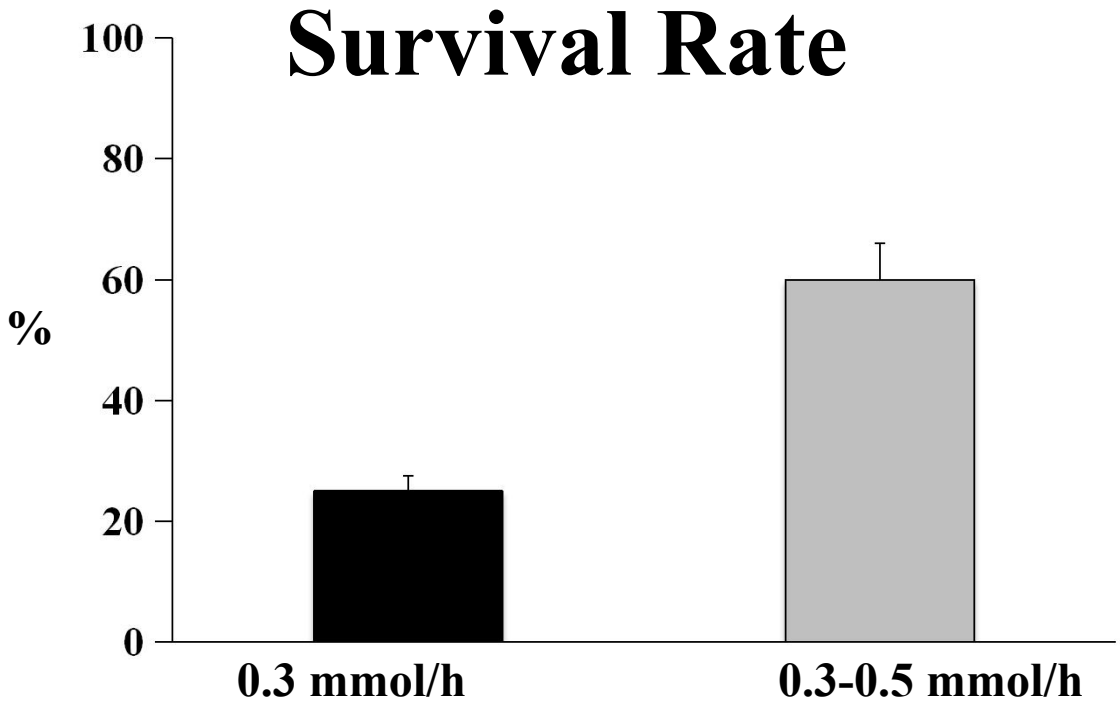

In corso di ipoNa severa (<120) sintomatica

evitare una velocità di correzione del sodio troppo lenta

(< 0.3 mmol/L/h)

durante le prime 48h dall'ospedalizzazione,

migliora la sopravvivenza e riduce la durata della degenza

TERAPIA IN CORSIA

Calcolo del deficit del sodio

Total Body Water (TBW) = 50% x peso corporeo

Deficit di Sodio = TBW x (TNa^+ - PNa^+)

Ove

TNa^+= valore sodiemia da raggiungere (140 mEq)

PNa^+= valore sodiemia del paziente (110 mEq)

Ad esempio:

TBW: 0.5 x 70 Kg = 35 L

Deficit di sodio = 35 x (140 – 110) = 1050 mmol

Quindi bisogna somministrare **1050 mmol** per riportare la sodiemia da 110 mEq a 140 mEq.

1050 mmol Na+ per correggere 30 mmol in 60h =

6,8 litri soluzione fisiologica 0.9% (154 mmol/l)

2 litri soluzione salina ipertonica 3% (513 mmol/l)

TERAPIA IPONATREMIA

Calcolo dell'infusione di salina ipertonica

Take Home Message:

Volendo rispettare una velocità di correzione pari a 0.5 mEq/h;

Quindi 30mEq (140-110) in 60h; quindi 2 l Ipertonica in 60h ;

quindi = 34ml/h / 70kg = **0,5 ml/kg/h**

Adrogué HJ, N Engl J Med 2000

Grazie…