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插上知识的翅膀，成为国际化护理人才；
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CGFNS 应试指导丛书

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CGFNS

考试

考点解析·成人护理分册

(上册)

◎主 编 周兰姝

上海科学技术出版社



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前 言

当前,护士人力资源严重缺乏已成为许多发达国家的普遍现象。据估计,美国到 2010 年将有 11.4 万个注册护士职位空缺,到 2020 年短缺量将达到 50 万人;其他一些发达国家如英国、澳大利亚、新西兰、加拿大、新加坡等,也将面临同样的问题。因此,这些国家纷纷将引进护士人才的触角延伸到发展中国家,而中国随着近年来高等护理教育事业的蓬勃发展,已成为护士人力资源最丰富的国家之一。国内就业难度的逐步升高与国外丰厚的薪金和良好的就业环境形成强烈对比。通过 CGFNS (Commission on Graduates of Foreign Nursing Schools) 资格考试,即美国海外护士资格认证考试,获得 CGFNS 证书,成为广大中国护士获得移民工作签证、开拓国外就业市场的重要手段,使护士出国不再是梦想。自 2003 年我国引进 CGFNS 考试以来,各地 CGFNS 培训机构如雨后春笋般涌现,这对于推动中国护理教育国际化,提高中国护理人才在职培训水平具有很大促进作用,也推动了高校护理教学、教材的改革;但是由于信息局限、教材缺乏、语言障碍以及护理思维方式等差异,使 CGFNS 培训收效甚微,对于多数迫切希望早日出国的护士而言,该考试仍是一道较难逾越的鸿沟。

基于此,在上海科学技术出版社的倡导下,第二军医大学护理系借助与美国麻省大学护理学院、英国兰开夏大学、澳大利亚大学的广泛合作关系,组织了一批专业知识扎实、临床经验丰富、英语综合能力强、到欧美国家做过访问学者或进修的中青年师资担任该丛书主编和副主编,所有编著人员均为医学硕士或以上学历且接受过 CGFNS 培训。丛书旨在通过系统、全面的 CGFNS 考试考点知识解析和模拟训练,帮助广大中国护士顺利获得 CGFNS 证书,同时帮助广大在职护士提高专业英语知识,增强临床应变能力,转变护理思维模式,掌握国外护理发展趋势。

该丛书是一套系列丛书,按内容分册,包括 CGFNS 考试常用词汇介绍、内外妇儿及精神疾病的知识点解析、CGFNS 考试概况和应试技巧以及模拟考题训练。丛书有三大特点:一是中英文同步介绍,便于读者阅读和记忆;二是以考点解析为主,提纲挈领,便于读者深入理解问题;三是重点明晰,在每章开头即交代需重点掌握和了解的内容,便于读者抓住重点。在编写过程中,编者始终围绕美国护士该掌握哪些知识、在临床中该以什么为重点,充分考虑文化

2 前 言

差异在护理工作中的重要性,并将其体现在知识点解析和问题举例中,使护士在掌握专业知识的基础上,对美国的多元文化和护患沟通有更进一步的了解。

该丛书是护理人从护理的角度出发,为提高护士国际化水平而编著的,它不仅弥补了目前国内 CGFNS 考试培训市场教材的空缺,对于进一步规范 CGFNS 考试培训也有一定的导向作用。随着外资医院的涌现,国际化护士在中国也具有较强的竞争力,因此,该丛书不仅可作为准备参加 CGFNS 考试护士的参考书,也适用于广大临床护士和护理教育工作者阅读,以提高国际化职业竞争力,提升护士的社会地位。所有参编人员竭诚希望丛书能成为广大护士的良师益友,走进大家的读书时间。

由于 CGFNS 考试在国内刚刚起步,而编者水平有限,故书中不足之处在所难免。恳请广大读者和同行不吝指正,以期更加完善和提高,在此一并表示谢忱。

周兰姝 王志红

2005 年 7 月

编写说明

成人护理学是 CGFNS 考试的重要组成部分,其内容包括内外科护理学、眼科护理学、耳鼻喉科护理学、神经内科护理学以及与美国护理文化、法律有关的临床问题,涉及内容多,范围广。根据我国护理教育的现状,我们在参照大量国内外成人护理教材,实地考察美国、英国等护理教育,认真分析 CGFNS 考试和 RN 考试,仔细比较国内外成人护理教学和考试中的差别的基础上,有选择、有针对性地编写了该书。部分作者还亲自参加了 CGFNS 考试。

全书共 15 章,内容涉及内外科护理学、眼科护理学、耳鼻喉科护理学、神经内科护理学的主要内容。为了便于读者学习,每节内容按基础知识、临床特点、病人管理、重要信息、相关知识和相关技术六大部分编排。基础知识以涉及本节内容的基本概念和知识点为主,包括相关定义、解剖、生理、病理、病理生理等;临床特点以护理评估的结果为主,包括主(重)要症状、体征、诊断性检查结果;病人管理以疾病的处理为主,包括急救、治疗、护理、康复、健康教育等相关内容;重要信息是本节内容中的一些重点或归纳性较强的图表,对本节中的许多知识点起到提纲挈领的总结作用;相关知识和相关技术则包含了上述部分不能涵盖、但有必要了解和掌握的技术和检查方法。全书采用中、英文对照形式以保证读者对知识的正确理解;每章开头设考点概述,对本章的考点、重点、难点进行总结,便于读者了解全章概貌并进行有重点的自学。

本书在编写过程中突出护理特色,注意引进与我国护理教育有差异的知识点如伦理、健康教育、康复等内容。全体编者参阅了大量的原版教材,在编写时力求言简意赅、层次分明、条目清晰、内容全面、重点突出、护理特色明显。我们希望本书不仅能成为参加 CGFNS 考试人员必备的辅导书,更能成为广大护理人员提高专业英语和专业知识的参考读物,亦或成为广大在校学生的双语教材。真诚地希望该书能成为了解国内外成人护理教育内容差异的一个窗口,如能在我国的护理教育及护理教育改革中尽到一点绵薄之力,则每一位参与该书编写的作者亦将感到十分欣慰。

由于本书的编写时间仓促、水平有限,不当之处在所难免,敬请广大读者和同行批评指正,以求再版时改进与完善。

周兰姝

2006 年 12 月

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Chapter 1 Fluid, Electrolyte and Acid-Base Imbalance

(水、电解质及酸碱失衡)

【考点概述】

水、电解质及酸碱失衡主要涉及体内水、钠、钾、钙、镁、酸、碱过多或过少及其引起的问题。均应全面掌握,其中应重点掌握以下内容。

- (1) 体内水、电解质的分布,基本的转运机制,维持体液平衡的调节机制。
- (2) 水、电解质失衡的常见原因,临床特点及治疗护理要点。
- (3) 维持体内酸碱平衡的机制。
- (4) 酸碱失衡的常见原因、临床特点及治疗护理要点。
- (5) 血气分析的判读及分析酸碱失衡的基本步骤。
- (6) 液体治疗的常用液体种类及其基本用法。

Section 1 Water and Electrolyte Imbalance(水、电解质失衡)

【Basic knowledge】

1. Body water

Water accounts for 60% of total body weight in a normal adult, 75% in an infant, 45% in elderly and obese. The water content of the tissues of the body varies. Adipose tissue has the lowest percent of water; the skeleton has the second lowest water content. Skeletal muscle, skin, and the blood are among the tissues that have the highest content of water in the body. A reduction in volume of only 1% results in symptoms of deficiency or dehydration. Fluctuations in the amount of water in the body can have harmful and even fatal consequences.

2. Distribution of water in the body

Total body water(TBW) is distributed between two compartments separated by the cell membrane: The intracellular and the extracellular fluid.

(1) Intracellular fluid (ICF) is the fluid within the cells. ICF constitutes approximately 40% of body weight or 70% of the total body water.

(2) Extracellular fluid (ECF) is the fluid outside the cells. ECF constitutes approximately 20% of body weight or 30% of the total body water. The ECF is further divided into two compartments which are separated by a capillary membrane.

【基础知识】

1. 体内水

水在正常成人体内占 60%,在婴儿占 75%,在老人和肥胖者占 45%。体内不同组织的水含量不同。脂肪组织中水含量最低,骨骼次之。骨骼肌、皮肤和血液含水量最多。体内水减少 1%就会表现出水不足和脱水的症状。体内水量的波动会对身体有害,甚至造成致命的后果。

2. 体内水的分布

以细胞膜为界,体内水(TBW)分为两大部分,即细胞内液和细胞外液。

(1) 细胞内液(ICF)指细胞内的液体,约占体重的 40%或体内总水量的 70%。

(2) 细胞外液(ECF)指细胞外的液体,占体重 20%或体内总水量的 30%。细胞外液又以毛细血管膜为界,进一步分为两大部分。

- Interstitial fluid is the fluid between the cells. Interstitial fluid constitutes approximately 15% of body weight.

- Intravascular fluid is the blood plasma in the arteries and veins. Intravascular fluid constitutes approximately 5% of body weight.

3. Functions of water

(1) Solvent for nutrients, metabolic products, vitamins, minerals and wastes.

(2) Medium for blood transport.

(3) Participates in chemical reactions.

(4) Body temperature regulation (water spreads heat efficiently throughout the entire body water pool). When there is an excess of heat generation, increased amounts of water are directed to the skin and mainly lost as perspiration, via evaporation.

(5) Lubricant and cushion in joints.

4. Fluid spacing

Fluid spacing is a term used to classify the distribution of body water.

First spacing is a normal distribution of the fluid in both the extracellular and intracellular compartment.

Second spacing refers to an excess accumulation of institial fluid(edema).

Third spacing occurs when fluid accumulates in areas that normally have no fluid or only a minimum amount of fluid(e. g. , ascites, sequestration of fluid in the bowel with peritonitis, and edema with burns). Third fluid should be concerned because it takes fluid away from the normal fluid compartments and may produce hypovolemia.

5. Mechanisms controlling fluid and electrolyte movement

Many different processes control the movement of fluid and electrolytes between the intracellular and extracellular spaces. These processes include simple diffusion, facilitated diffusion, active transport, osmosis, hydrostatic pressure, and oncotic pressure.

(1) Diffusion

Diffusion is the net movement of ions or molecules from an area where their concentration is higher to an area where their concentration is lower. The difference between the high and low concentrations represents a concentration gradient, and diffusion tends to eliminate that gradient. Net movement of molecules stops when the concentrations are equal in both areas. These molecules move without external energy.

Diffusion occurs most rapidly when ①the distances involved are small; ②the concentration gradient is large; ③the ions or molecules involved are small.

(2) Facilitated diffusion

Facilitated diffusion moves molecules from an area of high concentration to one of low concentration. The rate of diffusion accelerates when some molecules combined with a specific carrier molecule.

- 组织间液指细胞间的液体,约占体重的 15%。

- 血管内液指动静脉里的血浆, 占体重的 5%。

3. 水的功能

(1) 溶解营养物质、代谢产物、维生素、矿物质和废物。

(2) 血液运输介质。

(3) 参与体内化学反应。

(4) 调节体温(水可以有效地向外扩散热量),当产热过多时,机体增加皮肤发汗,通过水分蒸发来散热。

(5) 在关节起润滑和缓冲作用。

4. 液体间隙

液体间隙是用于区分体内液体分布的术语。

第一间隙是正常分布在细胞内外的液体。

第二间隙是组织间隙聚集过多的液体(水肿)。

第三间隙是指液体聚集在通常没有液体或只有少量液体的腔隙(如腹水、腹膜炎的肠道积液、烧伤水肿)。第三间隙应予以考虑的原因是它可从正常组织间隙带走液体并可能导致低血容量发生。

5. 水和电解质的运动机制

控制水、电解质在细胞内外运动的机制很多,包括:简单扩散、易化扩散、主动运输、渗透压、静水压和胶体渗透压。

(1) 扩散

扩散是指离子或分子从高浓度区向低浓度区的运动。高低浓度的差异即为浓度梯度,扩散趋于减少这种差异,当两边的浓度相等时,分子的扩散运动停止。扩散不需外部供能。

在以下情况下扩散速度较快: ①距离小; ②浓度梯度大; ③扩散的离子或分子小。

(2) 易化扩散

分子从高浓度区向低浓度区运动,当运动的分子与特殊的载体结合时,扩散速率加快。

(3) Filtration

Fluids and the substances dissolved in them are forced through cell membranes by hydrostatic pressure. Net flow of water is due to overall effect of pressure on both sides of a membrane. Fluid is filtered out of capillaries in response to changes in hydrostatic pressures and oncotic (osmotic) pressures.

(4) Active transport

Active transport is a process in which molecules move in the absence of favorable diffusion gradient. External energy is required for this process because molecular are being moved against a concentration gradient. The concentrations of sodium and potassium differ greatly intracellularly and extracellularly. By active transport, sodium moves out of the cell and potassium moves in to maintain this concentration difference. The energy source for the sodium-potassium pump is ATP, which is produced in the mitochondria.

(5) Osmosis

Osmosis is a special type of diffusion. Water moves through the membrane from an area of low solute concentration to an area of high solute concentration. The semipermeable membrane prevent of solute particles. Osmosis requires on outside energy sources and stops when concentration differences disappear. It is very important for maintaining the chemical stability of body cells.

1) Osmotic pressure

The force of osmotic water movement. It can be described as a “pulling” of water. The higher the solute concentration of a solution, the greater the solution’s osmotic pressure. The osmotic pressure of the blood is also called blood colloid osmotic pressure (BCOP), because only the suspended proteins are unable to cross the capillary walls. Osmotic water movement will continue until either the solute concentrations are equalized or the movement is prevented by an opposing hydrostatic pressure.

2) Measurement of osmolality

Both Osmolality and Osmolarity measure the osmotic pressure.

Osmolality is a measure of a solution’s ability to create osmotic pressure and thus affect the movement of water. It measures the osmotic force of solute per unit of weight of solvent (mmol/L).

Osmolarity is another term to describe the concentration of solutions. It measures the total milliosmoles of solute per unit of total volume of solution (mmol/L).

The difference between osmolality and osmolarity is small, and the terms are often used interchangeably

3) Osmotic pressure in the body

ICV, the interstitial fluid volume (ISV) and the vascular space have the same concentration expressed as mmol per liter of water or the same

(3) 滤过

指液体及其溶质在静水压的作用下穿过细胞膜的运动。水的流动方向取决于细胞膜两侧所有作用力的合力方向。水从毛细血管滤出反映流体静力压和渗透压的改变。

(4) 主动运输

指分子逆浓度梯度进行的运动。由于逆浓度梯度,故需外部供能。细胞内外钠、钾离子浓度差异显著。通过主动运输,钠离子移出细胞、钾离子移入细胞以维持这种浓度差。其外部能量来源于钠-钾泵上线粒体产生的 ATP。

(5) 渗透

渗透是一种特殊类型的扩散,水从低浓度区移向高浓度区。半透膜不允许溶质分子通过,渗透需外部供能。当膜两侧浓度差消失时,运动停止。渗透对维持体细胞的化学稳定非常重要。

1) 渗透压

是指驱动水逆浓度运动的作用力,可理解为水的拉力。溶液中溶质浓度越高,溶液的渗透压越大。由于血液中只有悬浮的蛋白不能穿过毛细血管壁,故血液渗透压也称血浆胶体渗透压。当半透膜两侧浓度相同或有阻止水的作用力存在时,运动停止。

2) 渗透压的测量方法

克分子渗透压浓度和渗透压摩尔浓度均可用于测量渗透压。

克分子渗透压浓度是测量溶液产生渗透压能力的指标,是驱动水运动的能力。测量的是单位重量溶剂的渗透压。

渗透压摩尔浓度是另一个描述溶液浓度的名词。测量的是单位体积溶液中溶质粒子的数量。

克分子渗透压浓度和渗透压摩尔浓度差异甚微,常可交换使用。

3) 机体的渗透压

细胞外液包括组织间液和血液,有相同的浓度,以 mmol/L 为单位,