

美国民间健康基金会-中国

儿科护士教学大纲

基础课程

第八单元

输液和给药

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PROJECT HOPE/CHINA

PEDIATRIC NURSE
TEACHING PROGRAM
BASIC COURSE

MODULE 8
FLUID AND MEDICATIONS

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1987

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JOINT VENTURE

中文翻译

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STUDY GUIDE: FLUID AND MEDICATION ADMINISTRATION

I. Objectives

Upon completion of the module, the learner will be able to:

1. Assess an intravenous site and document the results.
2. Demonstrate the ability to use an autosyringe and a Harvard pump.
3. Demonstrate the ability to administer medications using methods A and B.
4. Identify signs of adverse reactions of a neonate/older child to a blood transfusion.
5. Demonstrate skills in administering blood products.

II. Sources of Information

Reguired Readings

A. Procedures

1. Placement of an Intravenous Catheter
2. Removing an Intravenous Catheter
3. Harvard Pump
4. Autosyringe Pump
5. Blood Transfusion
6. Harvard Pump Administration of Cardiotonic Drugs

B. Lessons

1. Intravenous Therapy
2. Medication Administration
3. Medications
4. Blood Transfusions
5. Transfusion Reactions

III. Clinical Activities

A. Performance Checklist

1. Harvard Pump
2. Autosyringe Pump
3. Blood Transfusion

B. Activities

1. Document an assessment of the intravenous site on the flowsheet and have the nurse educator review it.
2. With the nurse educator present, administer a medication using each method.

IV. Post Test

学习指引：输液和给药

I. 目的

修毕本单元后，学员应该能够：

1. 评估静脉注射部位和记录结果。
2. 应用自动注射器和 Harvard 泵。
3. 用方法A或B给药。
4. 掌握新生儿或幼童对输血有不良反应时的体征。
5. 掌握输血制品的技术。

II. 资料来源

必修课程

A. 操作程序

1. 放置静脉注射管
2. 除去静脉注射管
3. Harvard 泵
4. 自动注射器
5. 输血
6. 用 Harvard 泵给强心剂

B. 课程

1. 静注治疗
2. 给药
3. 药物
4. 输血
5. 输血反应

III. 临床活动

A. 实习项目

1. Harvard泵
2. 自动注射器泵
3. 输血

B. 活动

1. 观察静注部位，把结果记录在病历上，让导师评估。
2. 在导师监察下，用每种方法给药一次。

IV. 测验

LESSON: INTRAVENOUS THERAPY

I. Types of IV Catheters Used in Pediatrics

- a. 22 or 24 gauge Jelco should be used in extremities whenever possible.

1. Securing IVs

- a. Betadine and alcohol is used as a skin preparation for IV placement.
- b. IV needles or catheters must be secured with small tape strips so that the insertion site is visible. (Necrosis of the skin at the insertion site may be hidden from view if opaque covering is used)
- c. An IV board should be used to splint the extremity and prevent the neonate from dislodging the catheter or needle.
- d. Examine fingers or toes following taping to make sure tape is not restricting blood flow.

2. Observing IVs

- a. Changeset-up at 8 A. M. every day.
- b. Optimally, only two hours of solution should be placed in the burette at one time. If this is impossible, a maximum of eight hours of solution should be placed in the burette.

3. Assessment of IV site

- a. At the beginning of each shift, check and document the IV sites for a baseline, then check the IV sites every hour during your shift.
- b. Compare size of the extremity with the IV to size of the opposite extremity. If unequal, have another nurse examine the IV site.
- c. When IV is in scalp, compare that side to opposite side of the head. If unequal have another nurse examine the IV site.
- d. When the IV site is unusual in appearance, check for patency.
- e. If you are in doubt about whether or not the IV is patent, ask another nurse to double check it for you.
- f. If IV is infiltrated, clamp IV tubing, turn off.
- g. Withdraw IV needle or catheter and apply pressure until bleeding stops.
- h. Cover end of IV tubing with a clean needle.
- i. Always consider IV infiltrate as a source of a patient's irritability, particularly when flushed.

4. IV Rates

- a. Fluid rates are ordered by the M. D. in 24 hour increments. To find rate/hour, divide the total volume by 24.
- b. If IV rate is less than 10cc/hour, ask M. D. to order Harvard pump. All IV rates less than 10cc/hour should be maintained by a pump.

课程：静脉注射治疗

I. 儿科用的静注管类型

a. 四肢静注，尽可能用 Jelco 22 或 24 号小管。

1. 稳定静注管

a. 用 Betadine 和酒精清洁进针部位皮肤。

b. 静注小管要用粘贴胶纸贴牢，但进针点要显露出来。（如进针点被胶纸盖着，皮肤如有坏死，亦不能看见。）

c. 用小夹板固定婴儿肢体，以防静注管或针脱出。

d. 贴妥胶纸后，须检查病儿手指、脚趾，确保胶纸没有妨碍血液循环。

2. 静脉通路的常规护理

a. 每日早上 8 时更换静注。

b. 最理想是液体吊筒内存有只供 2 小时用的药量，若不可能，最多只许贮够供 8 小时用的药量。

3. 评估静注

a. 换班后，应立即检查和记录静注部位，作为基础，在当值时间内亦须每小时检查静注部位一次。

b. 比较进针肢体和另一边肢体的大小。如大小不同，请另一名护士复查进针点。

c. 如进针点在头皮，则比较进针一边和另外一边。如头皮两边不对称，请另一名护士复查进针点。

d. 当静注部位有异，先检查静注是否畅通。

e. 如不能肯定静注是否畅通，请另一护士再检查一次。

f. 如进针部位被浸润，先钳住胶管，停止输液。

g. 拔出静注针或管，然后按住进针区，至出血停止。

h. 输液管末端加盖（针头或无菌小盖）。

i. 如病人不安，特别是局部发红，一定首先考虑静注部位是否有浸润情况。

4. 静注速度

a. 静注速度依医生处方执行，通常以每 24 小时输血量表示，每小时输液速度，可用 24 小时输血量除 24 计出。

b. 如静注速度低于每小时 10cc，应向医生提出转用 Harvard 泵。任何低于每小时 10cc 的静注都应该用泵来保持。

5. Documentation of IVs

a. Use IV sheet and record hourly:

1. Type of solution-check solution hanging to assure compliance with doctor's orders.
2. Rate of infusion.
3. Record the volume of any IV flushes and type of flush solution used.
4. Insertion date is to be recorded on the tape at the IV site for Jelco catheters.
5. All burettes and 50cc syringes with IV solutions must be labeled with the nurses name, date, time, additives, type of solution and volume of diluent.

PROCEDURE: PLACEMENT OF AN IV CATHETER

Overview

Intravenous therapy refers to the infusion of fluids directly into the venous system. This may be accomplished through the use of a needle or by a cutdown.

Equipment

- IV solution-The type of solution is ordered by an M. D.
- IV administration set
- Needle or catheter of appropriate gauge
- The size of the needle depends on the age and size of the child and the type of fluid to be administered
- Alcohol and Betadine
- Dry cotton
- Small tourniquet or rubber band
- Restraining devices-extremity restraint
- Tape
- Cotton swab sticks

Procedure

Action

Preparation

1. Obtain the IV solution.

Rationale

1. The type of solution and the rate of flow are ordered by the doctor. The nurse should double check the new solution bottle with the doctor's order.

5. 静注记录

- a. 用静注表，每小时记录下列项目：
 - 1. 液体种类—检查液体是否与医生处方相同。
 - 2. 静注速度。
 - 3. 记录所用静注冲液的量和种类。
 - 4. 如用 Jelco 管，把进针日期记录在贴于进针位的胶纸上。
 - 5. 所有输液瓶和载药用的 50cc 注射筒，都要标明配液护士名字、日期、时间、液体种类、附加剂和稀释的容量。

操作程序：放置静注管

概 论

静脉治疗即直接把液体输入静脉系统，可用针或切开术进行。

器材

- 静注液—由医生处方
- 静注输液瓶或插管
- 针或穿刺管，大小要适当
- 针的大小，视病儿年龄，大小和液体性质而定
- 酒精和 Betadine
- 干棉球
- 小止血管或橡胶带
- 束缚婴儿的器材—浴巾、被单、肢体束缚用具等
- 粘贴胶纸
- 棉头拭子

操作程序

步骤

准备

- 1. 准备静注液。

原因

- 1. 静注液种类和静注速度全由医生处方，护士一定要重复检查液体是否与医生处方相同。

2. Check the IV fluid for sediment or contaminant by holding the container up to the light.
3. Wash hands.
4. Flush solution through IV tubing set-up and needle. Check to see that there is no air in set-up.
5. Promote the cooperation of the child. Infant; provide with a pacifier. Older Child; explain the procedure and its purpose.
6. Position the patient so that he/she is comfortable.
7. Restrain the patient as necessary.
2. Contaminant is most easily identified with the container in this position. If sediment is observed, the solution should be discarded.
3. Prevent infection.
4. This primes the tubing and decreases risk of air emboli.
5. This procedure will be less traumatic for the child if he/she is able to cooperate and is not frightened and resistant. The nurse can decrease the patient's fear if they are given explanations prior to procedure.
7. Protective devices like an arm board or leg board may be necessary to prevent the child from dislodging the IV needle. The type and size of such devices should be appropriate for the patient's age and the position of the IV. Toes and fingers should be visible to avoid compromising blood flow. The restraint board must be padded and the pressure points (heel, palm) padded with gauze.

Performance

8. Take equipment to patient's bedside.
9. Hang burette and place covered end of administration set within easy reach.
10. Wash hands again.
11. Select a vein, palpating and visualizing the exact course of the veins. If the patient's skin is thick or darkly colored, it may be difficult to visualize. Instead, palpate the veins.
12. Prepare the site with Betadine followed by alcohol.
13. Let the solution dry on the patient's skin before beginning.
10. Promotes infection control.
11. An older child has much thicker skin than a premature or older neonate.
13. Prevents infection.

2. 把液体容器高举，朝光观察液体有无沉淀物。
3. 先洗手。
4. 先用静注液冲洗所有静注管子和针，确定导管中没有空气。
5. 设法取得病人合作。
婴儿：供应橡皮奶嘴。
较大儿童：解释操作程序和目的。
6. 放置病人在舒适的体位。
7. 按需要束缚病人。

行动

8. 把器材集中到病床边。
9. 挂上输液瓶，输液管末端要盖好，放在就手处。
10. 洗手。
11. 选一静脉，触摸和观察静脉走势和位置。如病人皮厚或色素沉着，静脉会较难看到，这时要靠触诊定出静脉位置。
12. 先用 Betadine 涂进针部位，再用酒精涂擦。
13. 待进针部位干后，始可进行静注。

2. 这位置最易看出液体有无杂质。如发现
有沉淀物，要弃去液体。
3. 防止感染。
4. 先把管子充满，可防止空气栓塞。
5. 如能取得病人合作，使病人不反抗和
受惊，则操作程序的创伤性会较少，向
病人充分解释步骤的目的，可减少病人
恐慌。
7. 为防止病人弄脱静注针，要适当采用保
护设施（如静脉夹板等）。所用设施要
适合病人年龄和静注部位。手指和足趾
端要充分显暴，以监测血运，束缚夹板
要垫好，压力点（足跟，手掌）要用纱
布垫好。

10. 防止感染。
11. 较大的幼童，皮肤比早产儿和新生儿
厚。
13. 防止感染。

14. Select a needle or IV catheter.
15. Carefully connect the end of the IV administration tubing to the end of the needle, run fluid through the needle.
16. Insert the needle as per clinical instructions.
17. When inserting an IV catheter, advance the catheter while removing the stylet as soon as you see a blood return.
18. Release the tourniquet.
19. Attach IV administration tubing to the needle and tubing. When using a Jelco catheter, use a T-piece to connect the tubing to the catheter.
20. Open clamp on IV tubing and observe drip chamber. Fluid should flow easily and there should be no sudden swelling around the IV site.
21. Secure the needle and tubing to the patient with tape.
22. Regulate flow.
23. Label IV site with pertinent information. (Time, date).
14. A 20 to 22 gauge needle is adequate for a child and a 24 gauge is good for a neonate.
17. A continuing blood return will indicate the IV catheter is in the vein
20. Provides immediate recognition of infiltration.
21. Neonates and pediatric patients require secure taping to prevent accidental dislodging of needle.
22. Avoid fluid overload. Too rapid flow may cause fluid overload. Too slow a rate may cause the vein to clot.

PROCEDURE: REMOVING AN INTRAVENOUS CATHETER

Overview

The IV must be removed if there is any evidence of redness, swelling or pain at the site or with flushing. Any IV which can not be flushed easily should be removed.

Equipment

- Cotton
- Tape

Procedure

14. 选针或静注管。
15. 小心把静注管的输液端和针连接，使液体流经针管，排去空气。
16. 依临床指示进针。
17. 插静注管时，有血回流便即使管深入和移去管心针。
18. 松开止血带。
19. 使用 Jelco 管时，把静注管的输液端与“T”接管连接，再连接 Jelco。
20. 松开夹住输液管的钳子，观察滴定管，液体应该畅顺滴出，进针部位不应突然出现肿胀。
21. 用粘贴胶纸把针贴稳在病人皮肤上。
22. 调静注速度。
23. 标明进针部位资料（时间、日期）。
14. 20至22号针适合幼童用，新生儿可用24号。
17. 持续有血回流，显示静注管仍在静脉内。
20. 可立刻辨认出局部浸润。
21. 婴儿和儿科病人要妥善固定，以防其意外弄脱静注针。
22. 避免液体过荷。流速太快可引起液体过荷。流速太慢可引起静脉凝血。

操作程序： 除去静注管

概 论

如静注部位出现红、肿和痛，或在冲洗静注管时出现上述现状，都要除下静注管。任何静注管如果不能顺利冲洗，都应除去。

器材

- 棉球
- 粘贴胶纸

操作程序

Action	Rationale
1. Assemble equipment.	
2. Explain procedure to patient and/or family.	2. The nurse can decrease the patient's fear if they are given explanations prior to procedure.
3. Remove tape from tubing and catheter. Hold catheter hub while manipulating tape to prevent unnecessary movement that could injure the vein.	3. Tape should be removed slowly first, prior to the needle. Wetting the tape may hurt the patient less.
4. Remove the needle or catheter quickly and smoothly.	4. This will hurt the child less and decrease the chance of injury upon removal.
5. Quickly press cotton over venipuncture site and hold firmly until bleeding stops.	5. Pressure will cause the bleeding to stop quicker.
6. Apply cotton and tape over site.	6. Do not tape around the circumference of the extremity. This would restrict arterial blood flow and venous drainage of the distal extremity.
7. Continue to observe venipuncture site for redness, swelling or hematoma.	
8. Check site again in 15 to 30 minutes. Remove the old dressing as soon as there is no further bleeding.	8. Bleeding may continue and patient could lose a large percentage of circulating blood volume. Removing the old dressing allows better visualization of the old puncture site.

PROCEDURE: HARVARD PUMP

Overview

Infusion pumps are used to administer fluid in specific amounts to the patient. The Harvard pump is used to deliver IV fluid to the neonate if the IV rate is less than 10cc/hour. The Harvard pump is also used to deliver cardiotoxic drugs that require precise, constant infusions.

Equipment

- Harvard pump
- Extension tubing
- 50cc syringe

步骤	原因
1. 集中器材。	
2. 向病人和/或家属解释操作程序。	2. 如护士可在事前向病人充分解释，可减少病人恐慌。
3. 除去管和小管上的胶纸。除去胶纸时，要握住静注管近端，以减少不必要的移动，防止静脉受创伤。	3. 先慢慢除胶纸，然后再除针，先弄湿胶纸，可减少病人痛苦。
4. 迅速和顺滑地抽出静脉针或管。	4. 这可减少病人痛苦和减低创伤病人的机会。
5. 立刻用棉球用力压住静注部位，保持压力直至流血停止。	5. 压力可使止血较快。
6. 用胶纸把棉球贴在进针部位。	6. 胶纸不可绕缠肢体，因会阻碍动脉血运，以及静脉血液流向指尖足尖。
7. 继续观察静注部位，注意有无红、肿和血肿。	
8. 15至30分钟后再检查静注部位一次。出血一旦停止，立即移去旧的敷贴。	8. 出血可能持续，病人会因此损失大量血容量。除去旧敷贴，可以看清楚旧的针口。

操作程序：HARVARD 泵

概 论

输液泵是用来输定量液体给病人的。如新生儿输液速度少于每小时10cc，则要应用Harvard泵，此泵亦可用来输强心剂，因为这类药物用量要准，输入速度要稳定。

器材

- Harvard 泵
- 延续管
- 50cc 注射筒

Procedure: Neonate

Action

1. Check physician order for type, volume and of IV fluid to be infused.
2. Assemble equipment. Plug in Harvard pump.
3. Wash hands.
4. Draw up IV fluid into 50cc syringe and flush through extension tubing.
5. Label syringe with the contents.
6. Place syringe in holder. Adjust clamps.
7. Set the rate (cc/hr) that the IV will infuse at.
8. Turn pump on.
9. Check IV site prior to connecting new tubing.
10. Monitor the amount of fluid infused.

Rationale

1. Prevent medication errors.
2. Harvard pump does not have the ability to function by battery.
3. Prevents infection.
4. Expel air from tubing to decrease risk of air embolism.
5. Prevents confusion at the bedside especially when more than one pump is in use.
7. Allows precise fluid administration.
9. Monitor for infiltration because pump will continue to infuse even when IV has infiltrated.
10. Document actual amount infused. Volume should be the same every hour.

PROCEDURE: HARVARD PUMP ADMINISTRATION OF CARDIOTONIC DRUGS

Equipment

- Harvard pump
- Extension tubing
- 50cc syringe
- IV solution; usually 5% Glucose
- Medication

Action

1. Check the physicians order for type of medication, amount, the type and volume of diluent and the rate of infusion.
2. Wash hands.

Rationale

1. Insure proper medication in the proper dilution and solution are prepared.
2. Prevent infection.