



Intake and Output: A Critical Aspect of Care

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After reading the newsletter, the nursing assistant should be able to:

1. Describe normal fluid balance in the body and related imbalances.
2. Identify conditions and situations in which I&O may be ordered.
3. Discuss how to accurately measure and document I&O.

As the nurse looked over the intake and output record, he noticed that Mrs. Garry's output was very low, compared to her intake. The nurse checked with Nita, the nursing assistant, regarding the I&O amounts, and also assessed Mrs. Garry's condition. Based on this information, the nurse contacted the doctor, who prescribed medication for Mrs. Garry's heart failure and edema. Nita's accurate documentation of intake and output helped Mrs. Garry to receive needed medical treatment.



This newsletter will discuss intake and output (I&O), including fluid balance, reasons for I&O, accurate measurement and documentation, and calculation of I&O.

Fluid Balance in the Body

Normal water balance in the body is essential to life. Every cell depends on the correct amount of fluid to perform normal functions and to remove waste products. In addition, water regulates body temperature, promotes digestion, delivers nutrients to the cells, and helps to lubricate and cushion body structures. Water is so important that the majority of our body weight comes from water. The average adult's weight is roughly 2/3 water, or about 60%. This percentage is higher in infants and children, and lower in the elderly.

When normal fluid balance occurs, the amount of water entering the body is approximately equal to the amount leaving the body. Typical fluid

intake for an adult is 2.5—3 liters, or quarts, per day.

Imbalances in body fluid may result in either fluid overload or dehydration. With fluid overload, more fluid is entering the body than leaving it. This can occur if the kidneys are not working normally, since the kidneys are the main organs of fluid excretion. It can also occur if circulation is impaired, such as with heart failure. Blood does not circulate well to the kidneys in this case, and excess fluid is not excreted.

Dehydration occurs when more fluid is excreted than taken in. This can occur as a result of extreme heat or exertion, lack of access to water, diarrhea, vomiting, fever, certain medications, and increased urination, which may be caused by diabetes or another condition.

When patients are at risk for fluid imbalance, intake and output may be ordered. Collecting intake and output is the process of measuring and documenting most fluids that enter and leave the body.



Who Needs Intake and Output?

Any patient who is at risk for fluid imbalance may be placed on I&O. A doctor's order is not legally required. The nurse can order I&O, based on assessment of the patient's condition and needs. The facility policies usually provide guidelines for which patients require I&O. Make sure you are familiar with these policies and follow them.

Conditions and situations in which I&O may be ordered include patients who have:

- Kidney or heart conditions
- Vomiting or diarrhea
- Fever
- Profuse perspiration
- Signs of dehydration or fluid overload
- Certain medications, such as diuretics
- Poor fluid intake or difficulty drinking
- IV fluids or tube feedings
- Urinary catheters
- Had recent surgery or procedures
- Orders for fluid restriction or increased fluids

Measure and Document Accurately

Because the I&O results may be used to determine patient care, such as medications or the amount of IV fluid, accuracy in measuring and documenting is extremely important. Ensure that all equipment needed to accurately measure I&O is placed in the patient's room. A flow sheet is needed to record I&O amounts. To measure urine, patients without catheters must void into a collection device, such as a urinal, bedpan, or a plastic "hat" placed under the toilet seat. A clear, graduated container should be placed in the bathroom for measuring output. Gloves are also required to maintain Standard Precautions. All equipment should be clearly marked with the patient's name and room number, and used only for that patient. Signs should be placed at the bedside and in the bathroom advising that the patient is on I&O.

Intake that should be measured includes any liquids that enter the patient's body, such as fluids taken orally, IV fluids, tube feeding, fluids used to flush feeding tubes or IV lines, and blood products. All oral fluids should be counted, including anything that is liquid at room temperature. This includes gelatin, ice cream and ice chips. For ice chips, half of the total volume should be documented as fluid (1 cup ice chips = 1/2 cup water). Pureed foods, such as meats or fruits, are not considered liquid intake and are not documented on the I&O record.



Intake is normally measured and documented in milliliters (ml). Common household measurements of fluids, however, are often in ounces (oz). In some cases, you may need to convert ounces to milliliters. Since there are approximately 30 ml per ounce, this conversion can be done easily by multiplying the number of ounces by 30. For example, if a patient eats a 4-oz cup of ice cream, this equals 120 ml, since 4 oz X 30ml/oz = 120 ml. In some cases, the

patient may not drink all of a pre-measured amount of fluid. The actual intake can be calculated by pouring the remaining fluid into a measuring container, and subtracting this amount from the total. For example, if 60 ml are left over from a 240 ml drink, the patient took in 240—60 = 180 ml.

Output to be measured includes urine, vomitus, diarrhea, liquid stool from an ostomy, and secretions from suction or drainage tubes. Water is also lost from the body in evaporation from the lungs, during normal breathing, and from the skin. This is called insensible water loss, and cannot be measured. Insensible water loss is greatly increased with fever or rapid respirations. Perspiration is another fluid that cannot be measured. Excessive perspiration should be documented in the record.



When the patient voids into the collection device, make sure that no toilet paper is dropped in with the urine, as this will affect the measured amount. If the patient needs to have a bowel movement after voiding, remove the hat from the toilet or replace the bedpan, if possible, to keep stool out of it, as this will also affect the urine measurement. Only liquid stool is measured as output. Gloves should always be worn when measuring output, as well as a gown and goggles if splashing is likely.

Always measure I&O accurately, whether it's fluid you've given the patient to drink or a voiding in the urinal— never just estimate the amount. Write down the fluid amount immediately after measuring, to avoid forgetting it. When measuring urine output, do not "guesstimate" the amount if some urine spills or the patient voids in the toilet. Simply document the situation, such as "Voided small amount X1 in toilet. Reminded to use collection device or call for help." The I&O flow sheet is used throughout the shift to document each incident of fluid intake and output. At the end of the shift, the amounts should be added up to obtain the total amount of intake and output for that shift. These totals should then be documented on the appropriate form in the patient's chart. Then, the I&O totals from all 3 shifts are added up to document the intake and output for the past 24 hours.

The importance of accurate I&O should be emphasized to the patient and family members. If they don't realize its importance, they may not follow the guidelines. The patient may take in fluids without recording them or may void into the toilet.

Accurate I&O measurements can help to direct a patient's treatment and monitor his/her condition. Your care and attention to this skill helps to ensure that the patient receives optimal care.