Challenges of prescribing IV fluids as a non-medical prescriber

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What I will be covering

- Role of the Non-medical Prescriber (NMP)

- Background to prescribing fluids in nutrition patients
  - NICE (2006) Nutrition Support
  - NCEPOD (2010) A mixed bag
  - NICE (2013) IV Fluids

Role of the NMP

Prescribing responsibilities include:

- improving patient care without compromising patient safety
- making it easier & quicker for patients to get the medicines they need
- increase patient choice in accessing medicines
- make better use of the skills of health professionals
- contribute to the introduction of more flexible team working across the health service

- Currently nurses, pharmacists, optometrists, physiotherapists, chiropodists or podiatrists, radiographers and community practitioners may undertake further professional training to qualify as non-medical prescribers.

- Dietitian's are to be trained as supplementary prescribers (2016)

What can NMP's prescribe

Independent Prescriber

- nurse and pharmacist independent prescribers are able to prescribe any medicine for any medical condition within their competence, including any controlled drug in Schedule 2,3,4 or 5

Supplementary prescribers

- may prescribe any medicine (including controlled drugs), within the framework of a patient-specific clinical management plan, with a diagnosis, which has been agreed with a doctor.

Safe intravenous fluid prescribing requires the integration of relevant clinical skills, such as the assessment of fluid balance, with an understanding of fluid physiology under normal and pathological conditions and the properties of commonly available intravenous fluids.

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NICE (2006) Nutrition Support for Adults

- PN overrides many homeostatic mechanisms and presents a large osmolar load
- 30-35 mls /kg body weight setting allowances for extra losses from drains, fistulae, etc (stoma, sweating, saliva not swallowed)
- All sources of fluid must be considered
  - Enteral, oral, IV fluid and medication to stop over prescription in patients esp. surgical patients where excess fluid and sodium can lead to oedema and prolonged ileus

NCEPOD (2010) Parenteral Nutrition: *A Mixed Bag*

- To examine the process of care of patients receiving PN in hospital in order to identify remediable factors in the care received by these patients

- Documentation not good, so many patients data excluded

NCEPOD (2010) Parenteral Nutrition – a mixed bag

Additional IV Fluids (877 adult cases reviewed)

- 513 / 877 (58.5%) had additional IV fluid prescribed,
  - 168 / 877 (19%) did not, insufficient data on 196 / 877 (22%)
  - 513 who had additional IV Fluids
  - 53% appropriate
  - 12% was inappropriate
  - 35% had insufficient data

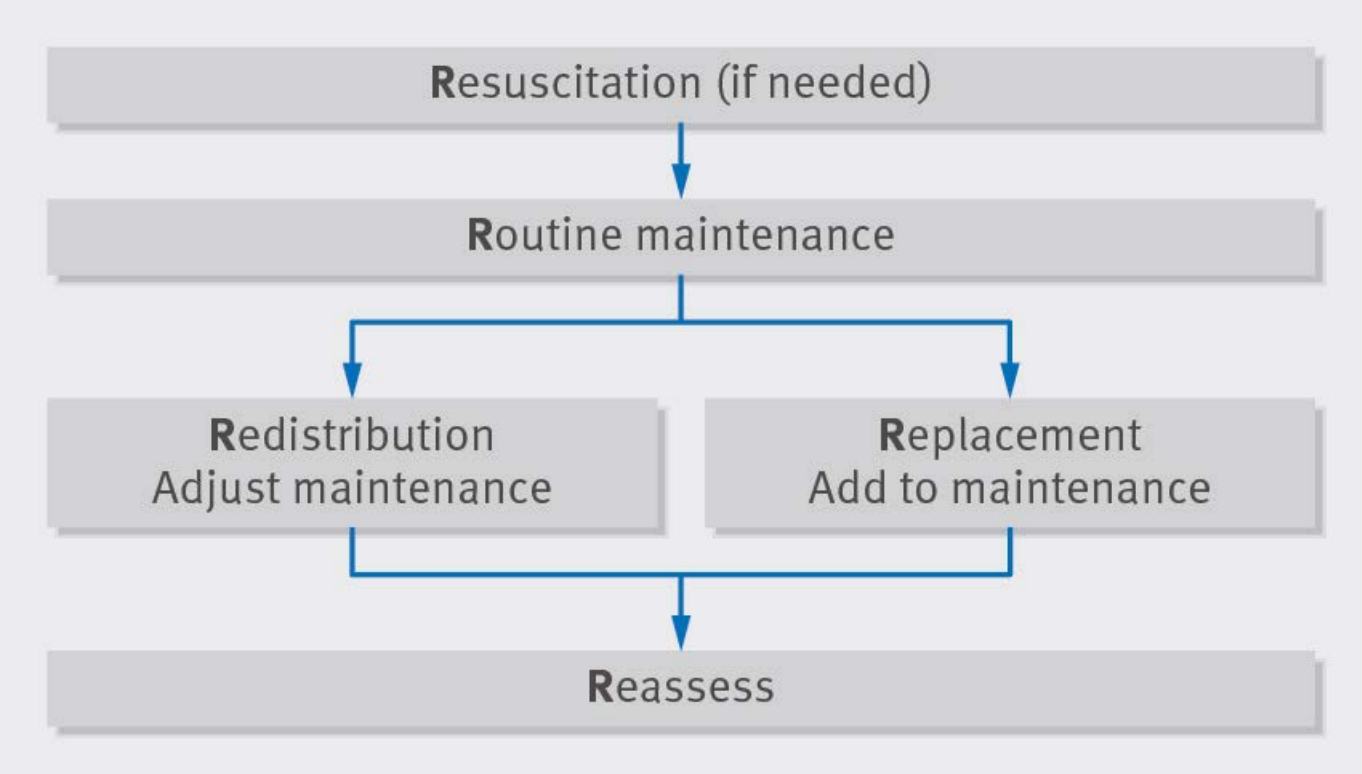
Recommendations

- Intravenous fluids should only be prescribed where there has been an active assessment of the volume of PN already being administered and there is clear indication that further fluids / electrolytes are required. (Consultants)
- All hospitals should have a PN proforma which includes: Indication for PN; Treatment goal; Risk of and precautions taken against re-feeding syndrome; PN prescription; Weight and Biochemical monitoring. (Medical Directors)

NICE (2013) intravenous fluid therapy in adults in hospital

- Many IV fluid prescribing practices - historical rather than clinical trials.
- Trials excluded
  - varied outcome measures in heterogeneous groups,
  - different types of fluid
  - different electrolyte content
  - different volumes and rates of administration and, in some cases, the additional use of inotropes or vasopressors.
- Most trials have been undertaken in operating theatres and critical care units rather than admission units or general and elderly care settings.

Prescribing IV Fluids – the 5 R's



NICE National Institute for Health and Care Excellence

Algorithms for IV fluid therapy in adults

Algorithm 1: Assessment

Using an ABCDE (Airway, Breathing, Circulation, Disability, Exposure) approach, assess whether the patient is hypovolaemic and needs fluid resuscitation
Assess volume status taking into account clinical examination, trends and context. Indicators that a patient may need fluid resuscitation include: systolic BP <100mmHg; heart rate >90bpm; capillary refill >2s or peripheries cold to touch; respiratory rate >20 breaths per min; NEWS ≥5; 45° passive leg raising suggests fluid responsiveness.

Yes → **Algorithm 2: Fluid Resuscitation**

No →

Assess the patient's likely fluid and electrolyte needs
- History: previous limited intake, thirst, abnormal losses, comorbidities.
- Clinical examination: pulse, BP, capillary refill, JVP, oedema (peripheral/pulmonary), postural hypotension.
- Clinical monitoring: NEWS, fluid balance charts, weight.
- Laboratory assessments: FBC, urea, creatinine and electrolytes.

Can the patient meet their fluid and/or electrolyte needs orally or enterally?

Yes → **Ensure nutrition and fluid needs are met**
Also see Nutrition support in adults (NICE clinical guideline 32).

No →

Does the patient have complex fluid or electrolyte replacement or abnormal distribution issues?
Look for existing deficits or excesses, ongoing abnormal losses, abnormal distribution or other complex issues.

Yes → **Algorithm 4: Replacement and Redistribution**

No →

Algorithm 3: Routine Maintenance

Give maintenance IV fluids
Normal daily fluid and electrolyte requirements:
- 25–30 ml/kg/d water
- 1 mmol/kg/day sodium, potassium, chloride
- 50–100 g/day glucose (e.g. glucose 5% contains 5 g/100ml).

Reassess and monitor the patient
Stop IV fluids when no longer needed.
Nasogastric fluids or enteral feeding are preferable when maintenance needs are more than 3 days.

Algorithm 2: Fluid Resuscitation

Initiate treatment
- Identify cause of deficit and respond.
- Give a fluid bolus of 500 ml of crystalloid (containing sodium in the range of 130–154 mmol/l) over 15 minutes.

Reassess the patient using the ABCDE approach
Does the patient still need fluid resuscitation? Seek expert help if unsure

Yes → **>2000 ml given?**

Yes → **Seek expert help**

No →

Does the patient have signs of shock?

Yes → **Seek expert help**

No → **>2000 ml given?**

No → **Give a further fluid bolus of 250–500 ml of crystalloid**

Algorithm 4: Replacement and Redistribution

Existing fluid or electrolyte deficits or excesses
Check for:
- dehydration
- fluid overload
- hyperkalaemia/ hypokalaemia

Estimate deficits or excesses.

Ongoing abnormal fluid or electrolyte losses
Check ongoing losses and estimate amounts. Check for:
- vomiting and NG tube loss
- biliary drainage loss
- high/low volume ileal stoma loss
- diarrhoea/excess colostomy loss
- ongoing blood loss, e.g. melaena
- sweating/fever/dehydration
- pancreatic/jejunal fistula/stoma loss
- urinary loss, e.g. post AKI polyuria.

Redistribution and other complex issues
Check for:
- gross oedema
- severe sepsis
- hypernatraemia/ hyponatraemia
- renal, liver and/or cardiac impairment.
- post-operative fluid retention and redistribution
- malnourished and refeeding issues

Seek expert help if necessary and estimate requirements.

Prescribe by adding to or subtracting from routine maintenance, adjusting for all other sources of fluid and electrolytes (oral, enteral and drug prescriptions)

Monitor and reassess fluid and biochemical status by clinical and laboratory monitoring

'Intravenous fluid therapy in adults in hospital', NICE clinical guideline 174 (December 2013)

Prescribing fluids for nutrition patients

Advantages

- Can build in the correct fluid content
  - IV Nutrition and
  - IV Fluids
- Can give the right amounts of electrolytes
  - IV Nutrition and
  - IV Fluids

Disadvantages

- The doctors will change your prescription
  - Poor communication
  - Poor documentation
  - Poor understanding (both by the doctor or by the NMP)
- Other NMP's
  - Lack of understanding

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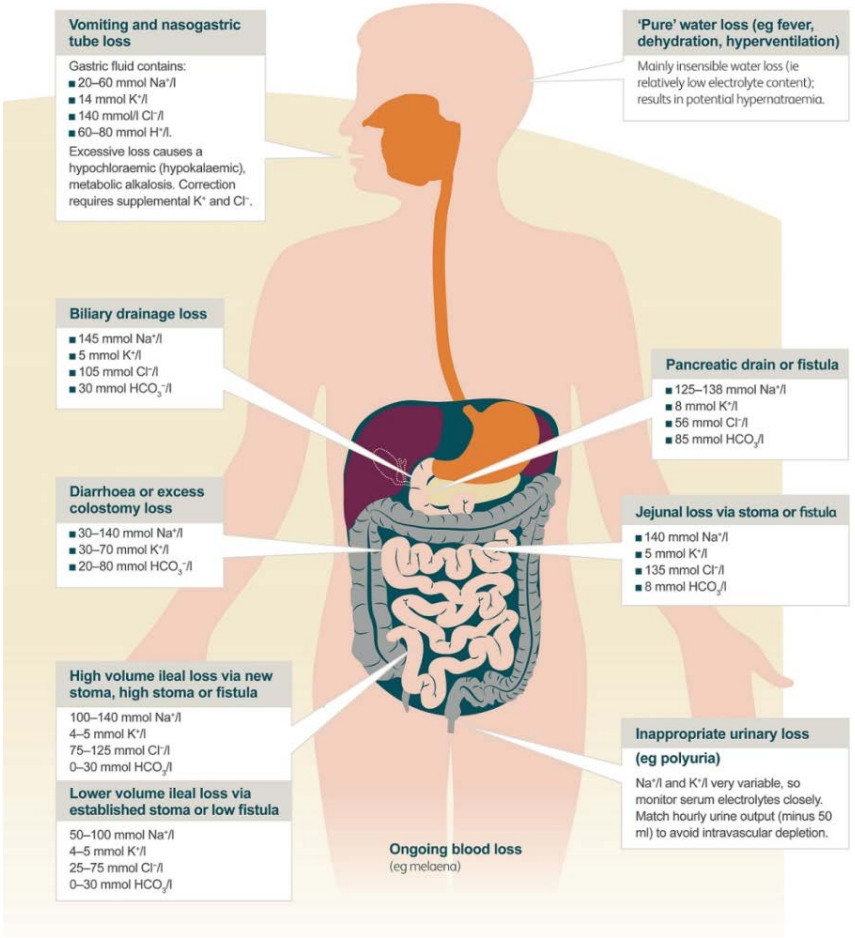
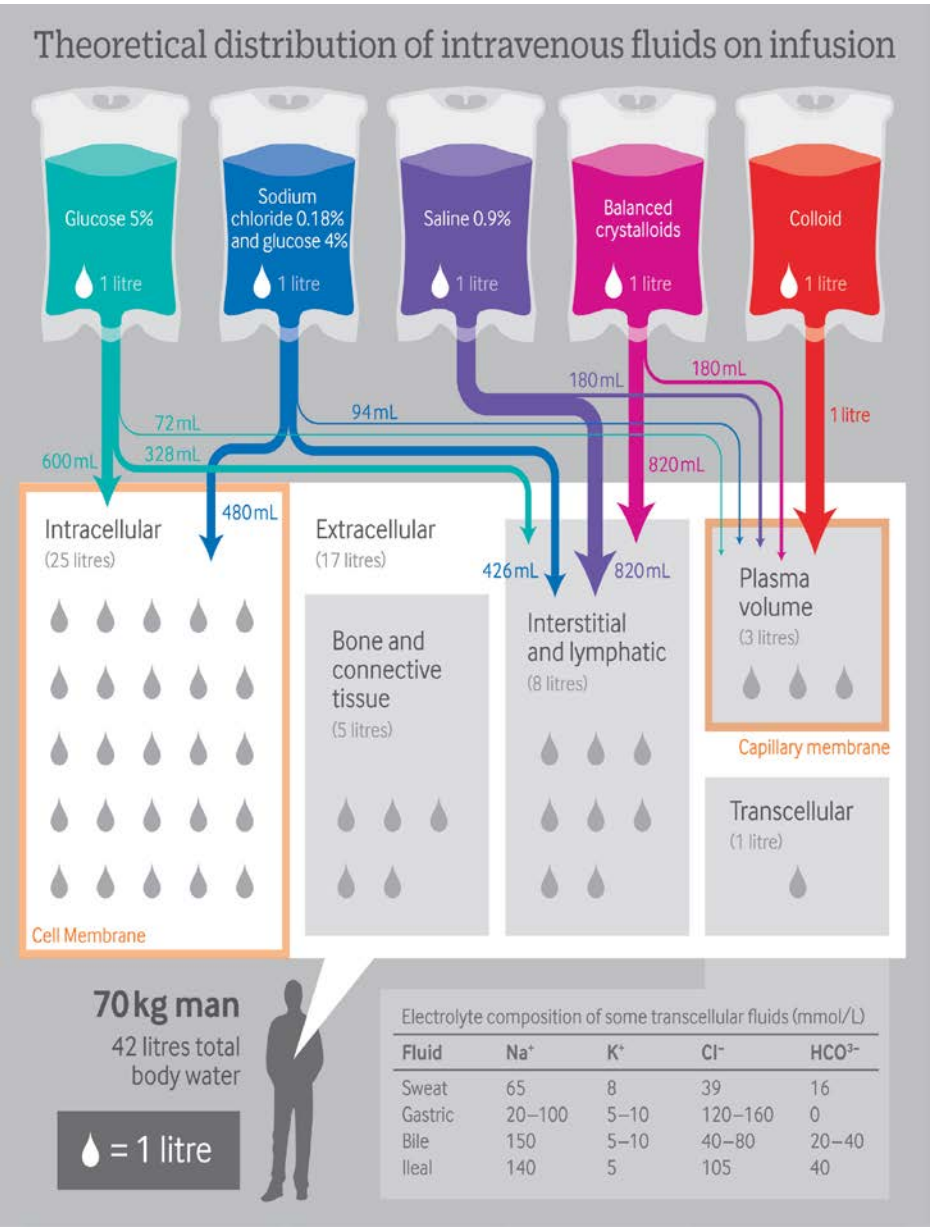
Assessment



- Take into consideration other sources of fluid (and sodium)
  - IV Medication
  - Oral
- Losses and the electrolyte content
  - GI losses
    - Stoma
    - Fistula
  - Extra GI losses
    - Sweat
    - Ascites
    - Urine

Fluid for thought!

- Average 70kg adult is made up of 42L fluid!
  - 14L is extracellular (Plasma 3.5L, interstitial 10.5L)
  - 28L is inside the cells
- With no potassium in the diet (or IV fluids) serum K^+ can decline in 1/52
- 1mmol/kg of Na, K, Cl / day
- 30 - 35mls / kg
- 5% Glucose is a good source of free water
- Obese – deal with Ideal Body Weight



- Can have oedema and still be hypovolaemic – fluids move out of intravascular compartment
- Stress response – K lost, sodium and water is retained and patients become oliguric
  - Distinguish between stress response and AKI
- Fluid balance charts incredibly important

Take home messages

- **Communicate**
  - With the team, the referring team, nurses, other teams and document decisions clearly
- **Team work**
  - With the team, the referring team, nurses, other teams and document discussions clearly
- **Educate others**
  - They may not know or understand