

## Policy Under Review

Please note that this policy is under review. It does, however, remain current Trust policy subject to any recent legislative changes, national policy instruction (NHS or Department of Health), or Trust Board decision. For guidance, please contact the Author/Owner.

Information Category	Detailed Information
<b>Document Title:</b>	Intravenous Fluid Therapy for Adults in Hospital Clinical Guideline V2.0
<b>This document replaces (exact title of previous version):</b>	Clinical Guideline for Intravenous Fluid Therapy for Adults in Hospital V1.0
<b>Date Issued / Approved:</b>	9 June 2021
<b>Date Valid From:</b>	August 2021
<b>Date Valid To:</b>	February 2025
<b>Author / Owner:</b>	Dr R. Evans Consultant Anaesthetist
<b>Contact details:</b>	01872 258195
<b>Brief summary of contents:</b>	Summary of NICE CG174 guideline for intravenous fluid administration in adults
<b>Suggested Keywords:</b>	Intravenous Fluid prescription Fluid calculator
<b>Target Audience:</b>	<b>RCHT:</b> Yes <b>CFT:</b> No <b>CIOB ICB:</b> No
<b>Executive Director responsible for Policy:</b>	Chief Medical Officer
<b>Approval route for consultation and ratification:</b>	Intravenous Fluid committee
<b>Manager confirming approval processes:</b>	Doug Riley
<b>Name of Governance Lead confirming consultation and ratification:</b>	Anneka McBride
<b>Links to key external standards:</b>	NICE CG174 (2013) NICE CG32 (Nutrition support)

Information Category	Detailed Information
<b>Related Documents:</b>	NICE CG174 (2013)
<b>Training Need Identified:</b>	Yes
<b>Publication Location (refer to Policy on Policies – Approvals and Ratification):</b>	Internet and Intranet
<b>Document Library Folder/Sub Folder:</b>	Clinical / Critical Care and Resuscitation

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# **Intravenous Fluid Therapy for Adults in Hospital Clinical Guideline**

**V2.0**

**August 2021**

## 1. Aim/Purpose of this Guideline

- 1.1. This guideline contains recommendations about general principles for managing intravenous (IV) fluids, and applies to a range of conditions and different settings. It does not include recommendations relating to specific conditions.
- 1.2. The contents of the guideline follow closely the recommendations published by the [National Institute for Health and Care Excellence \(NICE\) from their clinical guideline 174](#) (accessed 9<sup>th</sup> June 2021), with some modifications relevant to practice in RCHT.
- 1.3. This version supersedes any previous version of this document

### **Data Protection Act 2018 (General Data Protection Regulation – GDPR) Legislation**

The Trust has a duty under the Data Protection Act 2018 and General Data Protection Regulations 2016/679 to ensure that there is a valid legal basis to process personal and sensitive data. The legal basis for processing must be identified and documented before the processing begins. In many cases we may need consent; this must be explicit, informed, and documented. We cannot rely on opt out, it must be opt in.

Data Protection Act 2018 and General Data Protection Regulations 2016/679 is applicable to all staff; this includes those working as contractors and providers of services.

For more information about your obligations under the Data Protection Act 2018 and General Data Protection Regulations 2016/679 please see the *Information Use Framework Policy* or contact the Information Governance Team [rch-tr.infogov@nhs.net](mailto:rch-tr.infogov@nhs.net)

## 2. The Guidance

### 2.1. Principles and protocols for intravenous fluid therapy

- When prescribing IV fluids, remember the 5 Rs: Resuscitation, Routine maintenance, Replacement, Redistribution and Reassessment.
- Offer IV fluid therapy as part of a protocol (see Algorithms for IV fluid therapy)
- Patients should have an IV fluid management plan.

### 2.2. Assessment and Monitoring

### 2.3. Initial assessment:

- Using the ABCDE (airway, breathing, circulation, disability and exposure) approach, assess whether the patient is hypovolaemic and needs fluid resuscitation.

- Indicators of urgent requirement for fluid resuscitation include:
  - Systolic BP < 100mmHg
  - Heart rate > 90 bpm
  - Capillary refill time > 2 secs (and/or cool peripheries)
  - Respiratory rate > 20 breaths per minute
  - National Early Warning Score (NEWS)  $\geq$  5
- Assess likely fluid and electrolyte needs from the history, clinical examination, current medications, clinical monitoring and laboratory investigations.
  - History should include previous limited intake, thirst, quantity and composition of abnormal losses (eg drain losses, sweating, vomit: see Diagram of ongoing losses), and co-morbidities, including patients who are malnourished and at risk of re-feeding syndrome
  - Examination should include an assessment of fluid status, including pulse, BP, capillary refill, JVP, presence of pulmonary or peripheral oedema, and postural hypotension
  - Monitoring should include current status and trends in NEWS, fluid balance charts and patient weight
  - Laboratory investigations should include status and trends in FBC and U&Es

#### **2.4. Reassessment:**

- If patients are receiving fluids for resuscitation, reassess using the ABCDE approach. Monitor respiratory rate, pulse, blood pressure and perfusion continuously, and measure their blood lactate and/or arterial pH and base excess.
- All patients continuing to receive IV fluids need regular monitoring. This should include at least daily reassessment of clinical fluid status, U&Es, and fluid balance charts, along with twice weekly weight measurements.
- Note:
  - Patients with replacement or redistribution problems may need more frequent monitoring
  - Urinary sodium monitoring may be helpful in patients with high-volume GI losses
- Monitor serum chloride daily and reassess IV fluid prescription if hyperchloraemia develops.
- Report clear incidents of fluid mismanagement through the Datix system.
- Reassess fluid status and IV fluid management plan if the patient is transferred to a new ward or location.

## **2.5. Resuscitation:**

- If patients need IV fluids for resuscitation, use 0.9% Saline or Hartmann's solution in 500ml boluses over less than 15 minutes.

## **2.6. Routine maintenance:**

- For patients requiring routine maintenance alone, restrict the initial prescription to:
  - 25 – 30 ml/kg/day of water AND
  - approximately 1 mmol/kg/day of potassium, sodium and chloride AND
  - 50-100 g/day glucose to limit starvation ketosis. (This quantity will NOT address nutritional needs: see the RCHT Nutrition guideline.
- This can be achieved using 0.18% Saline in 4% glucose with 20mmol potassium on day one (use caution if total fluid prescription exceeds 2.5 litres per day as this prescription may increase the risk of hyponatraemia).
- Use ideal body weight to assess fluid needs in obese patients.
- Consider restricting fluids to 20 – 25 ml/kg/day in frail, older patients, those with renal impairment or cardiac failure, and malnourished patients at risk of refeeding syndrome.
- Consider adjusting the prescription to deliver the fluids during daytime hours.
- Allow for any fluids taken orally and deduct this volume from the total prescription.

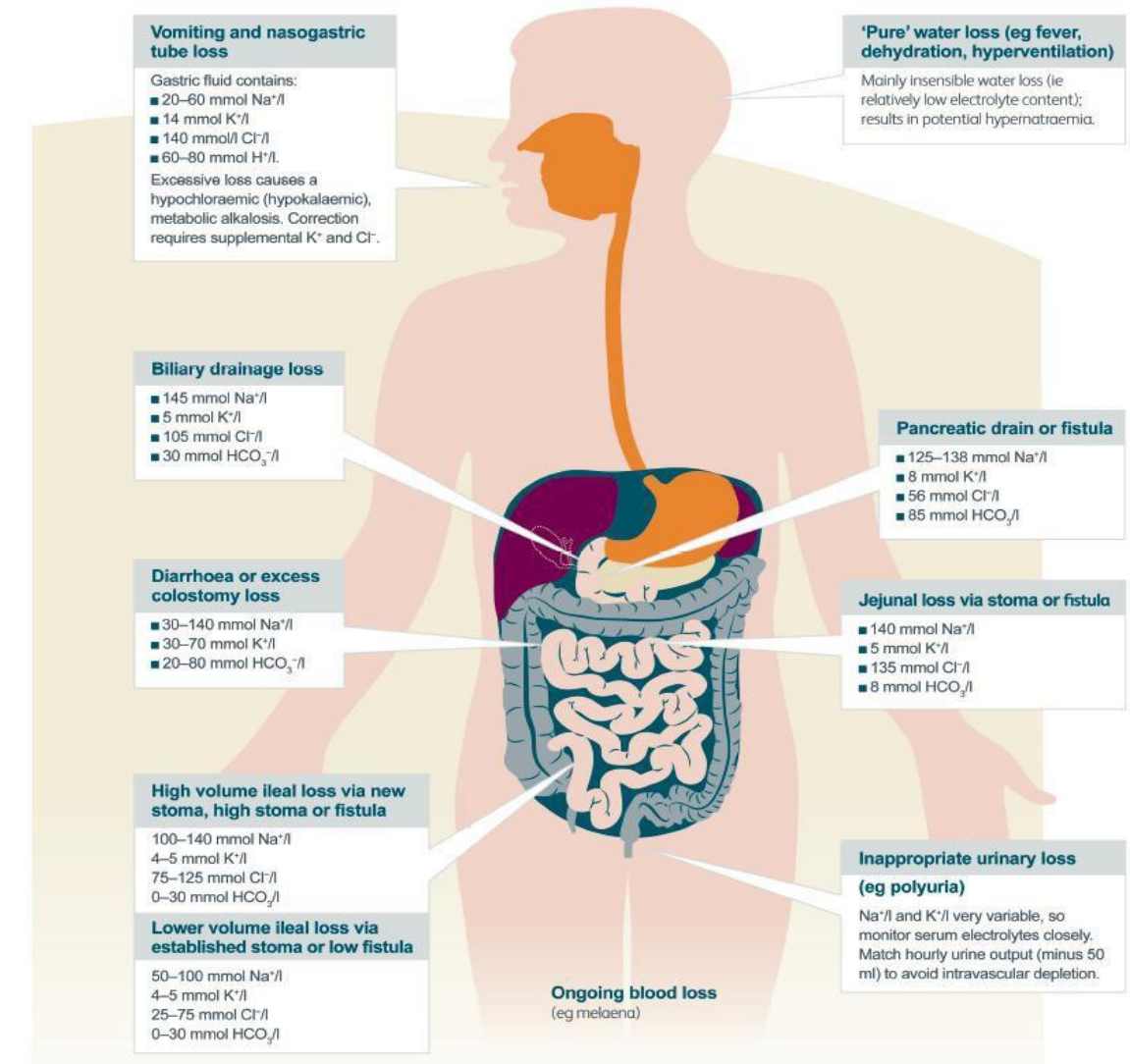
## **2.7. Replacement and Redistribution:**

- Add to or subtract from maintenance needs to account for existing fluid and/or electrolyte deficits or excesses, ongoing losses or abnormal distribution (see Diagram of ongoing losses).
- Seek expert help for complex fluid and/or electrolyte issues (such as: gross oedema, sepsis, hypo/hypernatraemia, renal, liver or cardiac impairment, post-operative patients, and malnourished patients). The appropriate expert will depend on the clinical situation, but may be the medical registrar, Outreach practitioner, or other specialist.

## **2.8. Algorithms for IV fluid therapy**

- Algorithm 1: Assessment
- Algorithm 2: Fluid resuscitation
- Algorithm 3: Routine Maintenance
- Algorithm 4: Replacement and redistribution

## 2.9. Diagram of ongoing losses



Source: Copyright – National Clinical Guideline Centre

"Intravenous fluid therapy in adults in hospital", NICE clinical guideline 174 (December 2013)  
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**Guide to IV fluid prescription (by body weight) for routine maintenance over a 24- hour period (this is total fluid requirement: a deduction may need to be made if the patient is also taking oral fluids).**

Body weight (kg)	Volume of water (ml)	Body weight (kg)	Volume of water (ml)
40-44	1000-1320	70-74	1750-2220
45-49	1125-1470	75-79	1875-2370
50-54	1250-1620	80-84	2000-2520
55-59	1375-1770	85-89	2125-2670
60-64	1500-1920	90-94	2250-2820
65-69	1625-2070	95-99	2375-2970
		≥100	2500-3000

Add 50-100g/day glucose (eg 5% Glucose contains 5g/100ml).  
Add 1mmol/kg of each of sodium, potassium and chloride

### 3. Monitoring compliance and effectiveness

Element to be monitored	Adherence to guideline Appropriate intravenous fluid prescription
Lead	Dr R Evans
Tool	NICE approved audit tool:  <a href="http://www.nice.org.uk/guidance/cg174/resources/cg174-intravenous-fluid-therapy-in-adults-in-hospital-baseline-assessment-tool2">http://www.nice.org.uk/guidance/cg174/resources/cg174-intravenous-fluid-therapy-in-adults-in-hospital-baseline-assessment-tool2</a>
Frequency	Initial monitoring 6months after introduction of guideline, thereafter annual or after substantial amendments to guideline
Reporting arrangements	Intravenous fluid guidance committee, minuted meeting
Acting on recommendations and Lead(s)	Intravenous fluid guidance committee
Change in practice and lessons to be shared	Educational responsibilities lie within the intravenous fluid committee. Decisions as to how to implement changes in practice to be made by this committee

### 4. Equality and Diversity

4.1. **This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the ['Equality, Inclusion & Human Rights Policy'](#) or the [Equality and Diversity website](#).**

#### 4.2. Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 2.



## Appendix 1. Governance Information

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<b>Suggested Keywords:</b>	Intravenous Fluid prescription Fluid calculator		
<b>Target Audience</b>	RCHT	CFT	KCCG
	✓		
<b>Executive Director responsible for Policy:</b>	Medical Director		
<b>Approval route for consultation and ratification:</b>	Intravenous Fluid committee		
<b>General Manager confirming approval processes</b>	Doug Riley		
<b>Name of Governance Lead confirming approval by specialty and care group management meetings</b>	Anneka McBride		
<b>Links to key external standards</b>	NICE CG174 (2013) NICE CG32 (Nutrition support)		
<b>Related Documents:</b>	NICE CG174 (2013)		
<b>Training Need Identified?</b>	Yes		
<b>Publication Location (refer to Policy on Policies – Approvals and Ratification):</b>	Internet & Intranet	✓	Intranet Only
<b>Document Library Folder/Sub Folder</b>	Clinical / Critical Care and Resuscitation		

## Version Control Table

Date	Version No	Summary of Changes	Changes Made by (Name and Job)
07 Nov 2014	V1.0	Initial Issue including revisions following discussion at fluids committee	Dr J Paddle
07 June 2021	V2.0	Routine Review and update against NICE guidelines	Dr Evans, Anaesthetic Consultant

**All or part of this document can be released under the Freedom of Information Act 2000**

**This document is to be retained for 10 years from the date of expiry.**

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### **Controlled Document**

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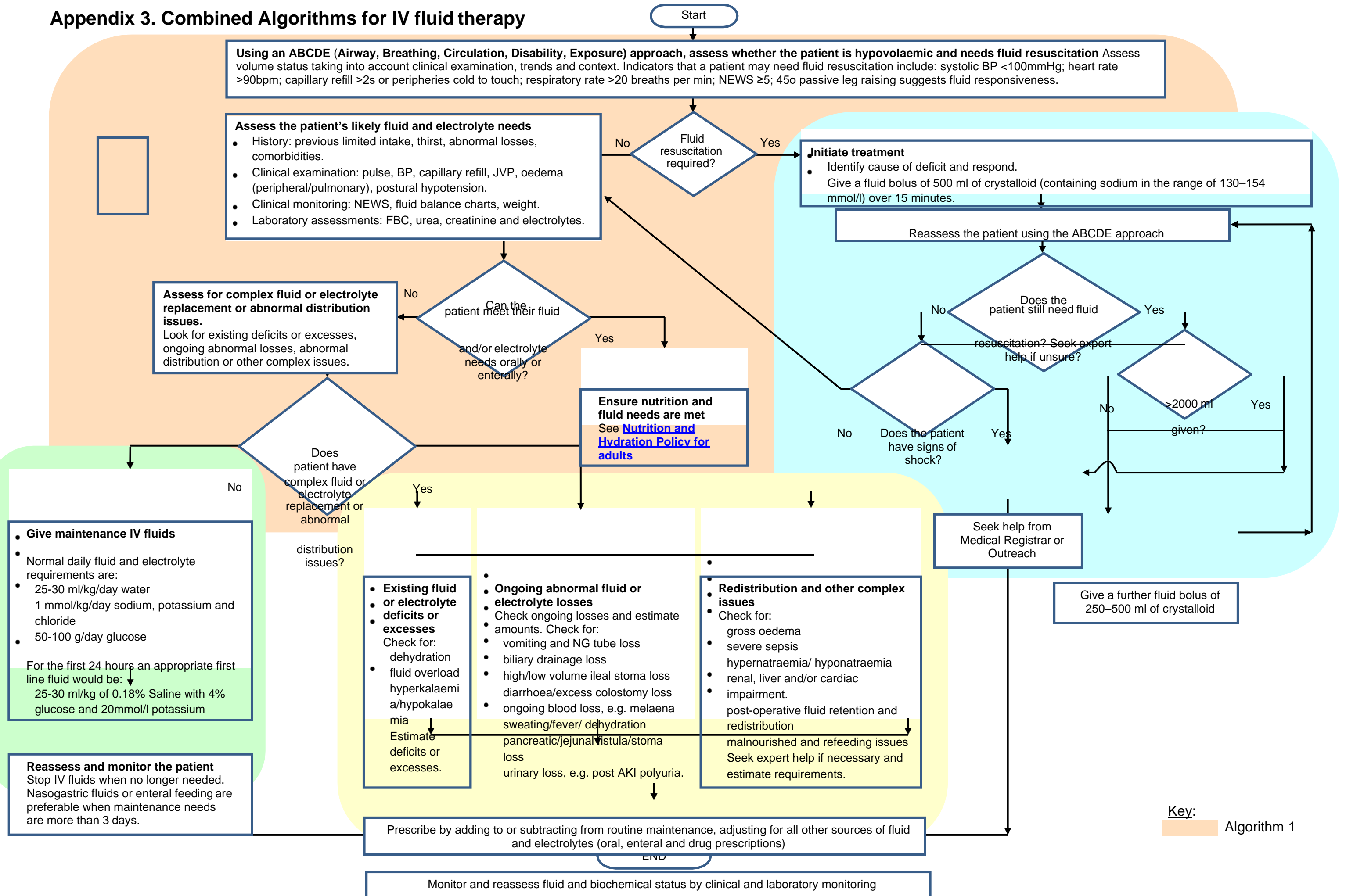
## Appendix 2. Initial Equality Impact Assessment

### Section 1: Equality Impact Assessment Form

<b>Name of the strategy / policy /proposal / service function to be assessed</b> Intravenous Fluid Therapy for Adults in Hospital Clinical Guideline V2.0						
<b>Directorate and service area:</b> Critical Care and Resuscitation			<b>Is this a new or existing Policy?</b> Existing			
<b>Name of individual/group completing EIA</b> Dr R. Evans, Anaesthetic Consultant			<b>Contact details:</b> 01872 253147			
1. Policy Aim Who is the strategy / policy / proposal / service function aimed at?		Medical and nursing staff of RCHT				
2. Policy Objectives		Improve intravenous fluid prescription and administration				
3. Policy Intended Outcomes		Improved fluid management for patients requiring intravenous fluids				
4. How will you measure the outcome?		Planned audit programme				
5. Who is intended to benefit from the policy?		Adult Patients requiring intravenous fluids				
6a). Who did you consult with?		Workforce	Patients	Local groups	External organisations	Other
		X				
b). Please list any groups who have been consulted about this procedure.		<b>Please record specific names of groups:</b> Intravenous Fluid committee				
c). What was the outcome of the consultation?		Agreed				

7. The Impact				
Please complete the following table. If you are unsure/don't know if there is a negative impact you need to repeat the consultation step.				
Are there concerns that the policy <b>could</b> have a positive/negative impact on:				
Protected Characteristic	Yes	No	Unsure	Rationale for Assessment / Existing Evidence
<b>Age</b>		✓		
<b>Sex</b> (male, female non-binary, asexual etc.)		✓		
<b>Gender reassignment</b>		✓		
<b>Race/ethnic communities /groups</b>		✓		
<b>Disability</b> (learning disability, physical disability, sensory impairment, mental health problems and some long term health conditions)		✓		
<b>Religion/ other beliefs</b>		✓		
<b>Marriage and civil partnership</b>		✓		
<b>Pregnancy and maternity</b>		✓		
<b>Sexual orientation</b> (bisexual, gay, heterosexual, lesbian)		✓		
<p><b>If all characteristics are ticked 'no', and this is not a major working or service change, you can end the assessment here as long as you have a robust rationale in place.</b></p> <p>I am confident that section 2 of this EIA does not need completing as there are no highlighted risks of negative impact occurring because of this policy.</p>				
<b>Name of person confirming result of initial impact assessment:</b>			Dr R Evans, Anaesthetic Consultant	
<p><b>If you have ticked 'yes' to any characteristic above OR this is a major working or service change, you will need to complete section 2 of the EIA form available here:</b></p> <p><a href="#">Section 2. Full Equality Analysis</a></p> <p><b>For guidance please refer to the Equality Impact Assessments Policy (available from the document library) or contact the Human Rights, Equality and Inclusion Lead</b></p> <p><a href="mailto:india.bundock@nhs.net">india.bundock@nhs.net</a></p>				

## Appendix 3. Combined Algorithms for IV fluid therapy



- Algorithm 2
- Algorithm 3
- Algorithm 4

UNDER REVIEW

## **Appendix 4. Algorithm 1: Assessment**

„Algorithm 1: Assessment“ has been published separately as Appendix 1 and can be accessed via the Document Library by searching for „Intravenous Fluid Therapy“ or [click here](#).

## **Appendix 5. Algorithm 2: Fluid resuscitation**

„Algorithm 2: Fluid resuscitation“ has been published separately as Appendix 1 and can be accessed via the Document Library by searching for „Intravenous Fluid Therapy“ or [click here](#).

## **Appendix 6. Algorithm 3: Routine Maintenance**

„Algorithm 3: Routine Maintenance“ has been published separately as Appendix 1 and can be accessed via the Document Library by searching for „Intravenous Fluid Therapy“ or [click here](#).

## **Appendix 7. Algorithm 4: Replacement and redistribution**

„Algorithm 4: Replacement and redistribution“ has been published separately as Appendix 1 and can be accessed via the Document Library by searching for „Intravenous Fluid Therapy“ or [click here](#).