

ieMR Health Informatics

# Diabetic Ketoacidosis (DKA) Paediatric PowerPlan Update

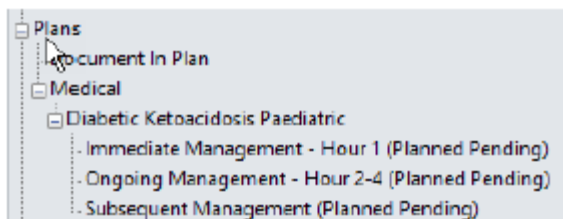
Overview of upcoming changes – 9<sup>th</sup> April 2020

There will be several upcoming changes to the DKA Paediatric PowerPlan. The changes will improve patient safety and align with clinical workflows that are consistent with the Queensland Paediatric Guideline for *DKA – Emergency management in Children*.

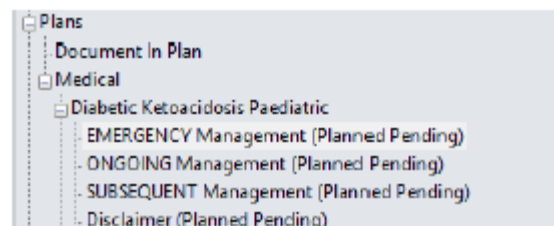
## Phase names

The PowerPlan phases will have minor descriptive changes, with the duration component removed.

### Previous naming



### New naming



## Order sorting

The primary level of order sorting have been updated to align with the sequential steps in managing paediatric DKA (previously was sorted by clinical category).

<i>EMERGENCY Management</i>	<i>ONGOING Management:</i>	<i>SUBSEQUENT Management</i>
Step 1: Initial Investigations	Step 1: Further Investigations	Step 1: Further Investigations
Step 2: Fluid Resuscitation		
Step 3: Fluid/Potassium Replacement	Step 2: Fluid/Potassium Replacement	Step 2: Fluid/Potassium Replacement
Step 4: Insulin IV Infusion	Step 3: Insulin IV Infusion	Step 3: Insulin IV Infusion
		Step 4: Transition to subcut insulin
Step 5: Other Actions		Step 5: Consults/Referrals

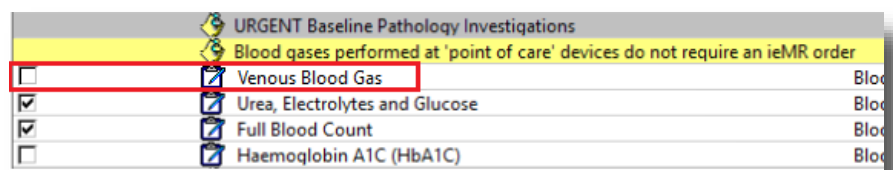
# Overview of EMERGENCY Management Phase

- **Step 1: Initial Investigations**
  - contains patient care and initial laboratory orders
- **Step 2: Fluid Resuscitation**
  - contains fluid bolus orders
- **Step 3: Fluid/Potassium Replacement**
  - contains fluids with and without potassium
- **Step 4: Insulin IV Infusion**
  - contains Actrapid infusion order to be commenced 1 hour after starting fluid replacement
- **Step 5: Other Actions**
  - contains Other Investigations, Admit to Inpatient and Consult orders

## Notable updates to EMERGENCY Management Phase

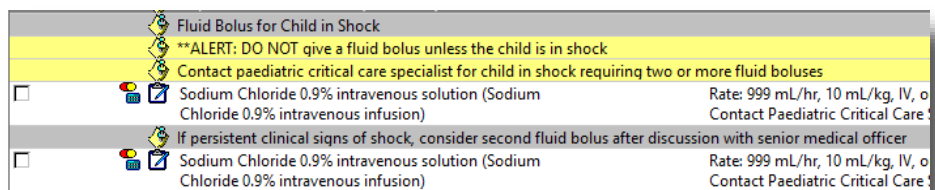
### Step 1: Initial Investigations

Venous Blood Gas pathology orders will need to be selected if required. Note – Blood gases performed at ‘point of care devices’ do not require an ieMR order.



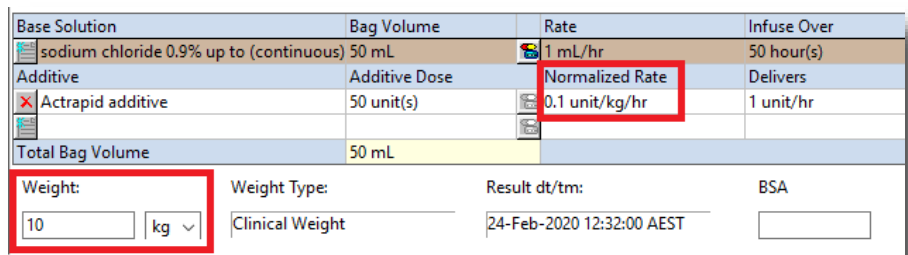
### Step 2: Fluid Resuscitation

Two sodium chloride 0.9% bolus orders have been added and will be available for the prescriber to order if required.



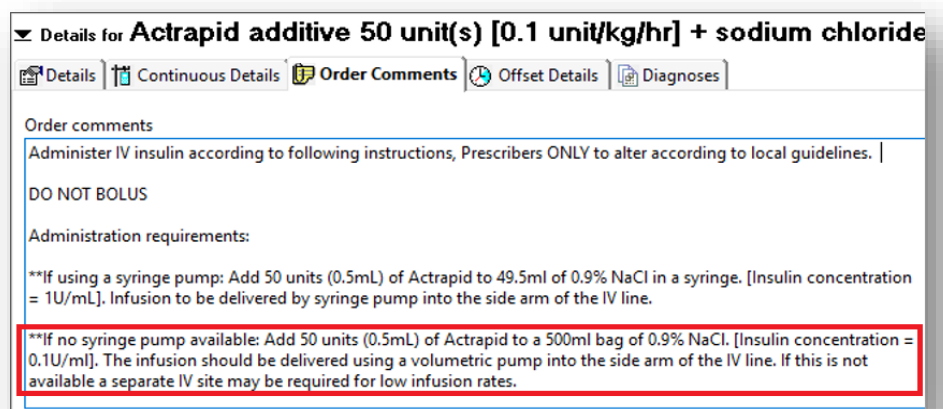
### Step 4: Insulin Infusion Rate

The *Normalised Rate* field will default to the recommended starting rate of 0.1 unit/kg/hr. If the patient has an ‘active’ weight (i.e. documented within the last 7 days), the ‘mL/hr’ infusion rate will automatically calculate.



### Step 4: Insulin Infusion Order Comments

The *Order Comments* provides additional guidance on Administration requirements if no syringe pump is available.




# Overview of ONGOING Management Phase

- **Step 1: Further Investigations**
  - contains urea, electrolyte and glucose and venous blood gas orders, with default collection interval of 2 hourly
- **Step 2: Fluid/Potassium Replacement**
  - contains fluid orders to allow for adjustment of glucose content dependent on blood glucose level (BGL), including glucose 10%
- **Step 3: Insulin IV Infusion**
  - contains advice on maintaining the insulin infusion rate (Note: the insulin order remains in **first** phase)

## Notable updates to ONGOING Management Phase

### Step 2: Fluid replacement recommendations


The persistent text have been updated to align with the Queensland Paediatric Guideline and provides guidance for adjustment of ongoing fluid replacement in relation to BGL results.

 Prescribing considerations below for adjustment of glucose content in replacement fluids


- if BGL falls to less than or equal to 15 mmol/L  
\*\*Prescribe IV fluid containing glucose 5% to prevent hypoglycaemia, DO NOT reduce the insulin infusion rate.
- if Issues maintaining BGL of 5-10 mmol/L despite running a solution containing 5% glucose  
\*\*Increase the glucose concentration in the IV fluid to 10% glucose. This solution will need to be mixed onsite. It is recommended that glucose is added to the bag of 0.9% Normal Saline + 40 mmol KCl due to the risks associated with adding KCl. Only decrease the insulin infusion rate if the BGL remains below the target range despite this glucose supplementation.
- if BGL falls below 4 mmol/L  
\*\*Administer a bolus of 2 mL/kg of 10% glucose over 3 minutes. Ensure fluid running has 5% glucose and consider use of 10% glucose. Insulin can temporarily be reduced 50% for 1 hour. DO NOT stop the infusion
- if BGL rises out of control or pH not improving after 4-6hrs  
\*\*Consult senior staff and re-evaluate for sepsis, insulin error, inadequate resuscitation, hyperchloraemic acidosis, salicylate overdose or other prescription or recreational drugs. Consider restarting protocol again

### Step 2: Additional fluid orders

Fluid orders containing Glucose 10% have been added and will be available for the prescriber to order if required.

 Fluids WITH potassium - default fluid selection unless anuria,


- Potassium chloride 40 mmol/L in Sodium Chloride 0.9% intravenous solution (Potassium Chloride 40 m...
- Glucose 5% with Sodium Chloride 0.9% and Potassium Chloride 40 mmol/L intravenous solution (Glucose 5...
- Glucose 10% with Sodium Chloride 0.9% and Potassium Chloride 40 mmol/L intravenous solution (...)




 Fluids WITHOUT potassium

- Sodium Chloride 0.9% intravenous solution (Sodium Chloride 0.9% intravenous infusion)
- Glucose 5% with 0.9% Sodium Chloride intravenous solution (Glucose 5% with 0.9% Sodium Chloride intra...
- Glucose 10% with Sodium Chloride 0.9% intravenous solution (Glucose 10% with Sodium Chloride 0.9% intr...

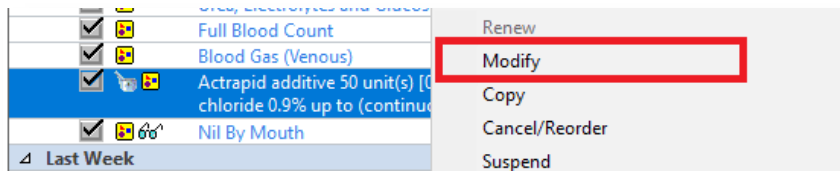
### Step 3: Insulin IV Infusion (Cannula 1)

The persistent text has been updated to align with the Queensland Paediatric Guideline and recommends not amending the insulin infusion rate unless hypoglycaemia occurs.

 Step 3: Insulin IV Infusion (Cannula 1)

-  DO NOT reduce the insulin infusion rate. The insulin dose needs to be ideally maintained at 0.1 units/kg/hr (or 0.05 units/kg/hour if initiated at this rate) to switch off ketoogenesis
-  Refer to guidelines above if hypoglycaemia occurs
-  To review IV insulin order, refer to the order in the first phase of the PowerPlan

If the insulin infusion rate needs to adjusted post-commencement, prescribers can locate the order and apply a 'Modify' action



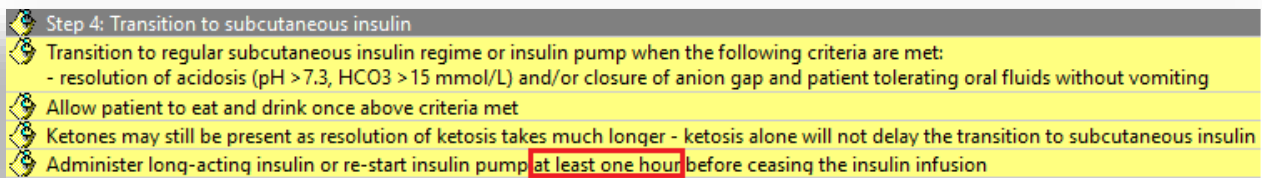
## Overview of SUBSEQUENT Management Phase

- **Step 1: Further Investigations**
  - contains urea, electrolyte and glucose and venous blood gas orders, with default collection interval of 2 hourly
- **Step 2: Fluid/Potassium Replacement**
  - contains fluid orders to allow for adjustment of glucose content dependent on blood glucose level (BGL),
- **Step 3: Insulin IV Infusion**
  - contains advice on maintaining the insulin infusion rate (Note: the insulin order remains in **first** phase)
- **Step 4: Transition to subcutaneous insulin**
  - contains advice on laboratory considerations, establishing oral take and recommended crossover duration
- **Step 5: Consults/Referrals**
  - contains consults to allied health teams

## Notable updates to SUBSEQUENT Management Phase

### Step 4: Transition to subcutaneous insulin

The recommended cross-over duration has been updated to at least one (1) hour to align with the Queensland Paediatric Guideline.



## Contact us

### ieMR Health Informatics

Children's Health Queensland Hospital and Health Service  
 Centre for Children's Health Research (CCHR)  
 Level 9 / 62 Graham Street, South Brisbane QLD 4101

**t** 07 3068 1999

**e** [CHQ\\_DigitalFuture@health.qld.gov.au](mailto:CHQ_DigitalFuture@health.qld.gov.au)

**w** <https://www.childrens.health.qld.gov.au/chq/about-us/digitalfuture/>