Management of diabetes in emergency department during coronavirus pandemic

This crib sheet is for emergency departments, acute medical admissions wards or acute medical assessment units to use during the covid-19 pandemic for people with:

- Known Type 1 diabetes
- Known Type 2 diabetes or unknown diabetes

Referring to your Trust’s specialist diabetes team

- Refer to your local diabetes team via the relevant diabetes specialist nurse or diabetes SpR bleep holder
- If the referring out of hours and no response from the diabetes bleep holder, please refer via your local system (i.e. email, electronic patient record)
- Referral must include telephone and/or email contact for the patient for diabetes team to organise a review.

Management of hyperglycaemia (>13mmol/l) in MAU – Known Type 1 diabetes

Fast acting insulin administration:

- This is based on either the total daily dose (total of all insulin taken within a 24 hour period (background and mealtime)) OR patient’s weight (if dose unknown)

<table>
<thead>
<tr>
<th>Ketones + to ++ on urine test and 1.5-3mmol/L on blood test</th>
<th>Give 10% of total daily dose as quick acting insulin every 2 hours plus usual insulin to carbohydrate ratio if eating. You may need to increase your basal (long acting) insulin dose by 10-20%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ketones +++ to +++++ on urine test and over 3mmol/L on blood test</td>
<td>Give 20% of total daily dose as quick acting insulin every 2 hours, plus usual insulin to carbohydrate ratio if eating. You may need to increase your basal (long acting) insulin dose by 10-20% or more.</td>
</tr>
</tbody>
</table>

- Insulin should be prescribed via EPR as STAT subcutaneous dose
- Further insulin doses should not be repeated within 2 hours of each other.
- For more information on management of blood glucose and ketones, refer to Sick day rules – Type 1 diabetes multiple daily injections (MDI) or Sick day rules – Type 1 diabetes insulin pump
- On discharge from ED please provide patient with Type 1 diabetes discharge pack

Medication adjustment: Adjust medication according to the patient information sheet on page 6

Fluid management: If COVID-19 positive/suspected then consider halving the amount of IV fluid administered to avoid exacerbating ARDS.
Management of hyperglycaemia (capillary glucose >18 mmol/l) in Acute assessment setting (ED/MAU) – Known Type 2 diabetes or unknown aetiology

Fast-acting insulin administration:

- This is based on either the total daily dose (total of all insulin taken within a 24 hour period (background and mealtime)) OR patient's weight (if not on insulin/unknown).
- Insulin should be prescribed via EPR as STAT subcutaneous dose
- Further insulin doses should not be repeated within 2 hours of each other.
- For more information on management of blood glucose and ketones, refer to Covid-19 sick day rules – Type 2 diabetes crib sheet
- See table below for guidance on insulin for Type 2 diabetes or unknown aetiology.
- For known Type 2 diabetes, on discharge from ED please provide patient with Type 2 diabetes discharge pack

| Total daily dose of insulin (only use body weight if dose unknown or insulin naive) | Dose of fast-acting insulin* (Novorapid/Humalog/Actrapid) according to capillary blood glucose (cBG) levels: |
|---|---|---|
| cBG 18-25 | cBG 26-30 | cBG >30 |
| <35 units - (≤70kg) | 3 units | 5 units | 7 units |
| 35-49 units - (70-99kg) | 4 units | 6 units | 8 units |
| 50-99 units - (100-199kg) | 6 units | 9 units | 12 units |
| ≥100 units - (≥200kg) | 10 units | 15 units | 20 units |

Medication adjustment: Adjust medication according to the patient information sheet on page 6

Fluid management: If COVID-19 positive/suspected then consider halving the amount of IV fluid administered to avoid exacerbating ARDS.
Management of hyperglycaemia (capillary glucose >18 mmol/l) in acute assessment setting (ED/MAU) –
Known Type 2 diabetes or unknown aetiology

**Further investigation and work up required**
*post first dose of subcutaneous insulin*

- Type 2 diabetes or unknown
  - **YES**
    - Is capillary glucose >18mmol/l?
      - **YES**
        - FAST-ACTING INSULIN ADMINISTRATION:
          - Give stat dose s/c fast-acting insulin*
          - Give 500ml 0.9% NaCl stat then >100ml/hr oral
        - Reassess response after 2 hours (repeat x2 max)
      - **NO**
        - Is there an underlying cause for hyperglycaemnia?
          - **YES**
            - Active foot disease
          - **NO**
            - Is there an underlying cause for hyperglycaemnia?
              - **YES**
                - Is infection? Cardiac? Other?
                  - **YES**
                    - Follow COVID19 Diabetic foot care pathway
                  - **NO**
                    - Is admission required?
                      - **YES**
                        - Contact diabetes team via bleep or local method and consider admission
                      - **NO**
                        - Diet controlled only?
                          - **YES**
                            - Insulin treated?
                              - **YES**
                                - HOME with **Type 2 discharge pack**
                                  - Adjust medications as per advice sheet**
                                  - Start Lantus 0.2 units/kg OD (give stat dose prior to discharge)
                                  - Refer to diabetes team: Bleep diabetes bleep holder or contact out of hours team
                              - **NO**
                                - HOME with **Type 2 discharge pack**
                                  - Adjust medications as per advice sheet**
                                  - Start Lantis (Glargine) 0.2units/kg OD (give stat dose prior to discharge)
                                  - GP to refer to community diabetes team
                            - **NO**
                              - HOME with **Type 2 discharge pack**
                                - Adjust medications as per advice sheet**
                                - Start 80mg gliclazide BD
                                - GP to follow-up
                          - **NO**
                            - Known diabetes?
                              - **YES**
                                - HOME with **Type 2 discharge pack**
                                  - Adjust medications as per advice sheet**
                                  - Start 80mg gliclazide BD
                                  - GP to follow-up
                              - **NO**
                                - Obesity?
                                  - **YES**
                                    - HOME with **Type 2 discharge pack**
                                      - Adjust medications as per advice sheet**
                                      - Start Lantis (Glargine) 0.2units/kg OD (give stat dose prior to discharge)
                                      - GP to refer to community diabetes team
                                  - **NO**
                                    - No unintended weight loss?
                                      - **YES**
                                        - HOME with **Type 2 discharge pack**
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                                                                  - GP to refer to community diabetes team
                                                          - **NO**
                                                            - Known diabetes?
Further investigation and work up required
*post first dose of subcutaneous insulin*

**Is capillary glucose ≥13 mmol/l?**

- **YES**
  - **Fast-Acting Insulin Administration:**
    - Give stat fast-acting insulin (via insulin pen/syringe) as per sick day rules*
    - Give 1L 0.9% NaCl over 1hr & then ≥100ml/hr oral
    - If insulin pump user follow sick day guidance re: set change etc.

- **NO**
  - **CONTINUE**
    - **Is there an underlying cause for hyperglycaemia?**
      - **YES**
        - **Active foot disease**
          - **YES**
            - Follow COIVD19 diabetic foot pathway
          - **NO**
            - Contact diabetes team via bleep or local protocol (EPR/email) and consider admission
        - **NO**
          - **Infection? Cardiac? Pregnancy? Other?**
            - **YES**
              - Follow COIVD19 diabetic foot pathway
            - **NO**
              - **Is admission required?**
                - **YES**
                  - Follow COIVD19 diabetic foot pathway
                - **NO**
                  - ADMIT & follow existing Trust Pathway

- **NO**
  - **Is any of the following apply?**
    - Unlikely to be able to follow advice?
    - Unlikely to self-care/insufficient support?
    - Unlikely to attend follow-up or answer phone?
    - Unable to tolerate fluids?
      - **YES**
        - HOME with Type 1 diabetes discharge pack
      - **NO**
        - **CONTINUE**
Medications

If you are on any of the following medication you need to stop them when you are sick. Restart when you are well (normally after 24 to 48 hours of eating and drinking normally). When you restart your medicine, just take them as normal.

ACE inhibitors – these medicines are used for heart conditions, high blood pressure and for kidney protection. If you are dehydrated, these medicines can stop your kidneys working properly.
  o **Examples:** names ending in ‘pril’ such as ramipril, lisinopril, perindopril

ARBs - these medicines are used for heart conditions, high blood pressure and for kidney protection. If you are dehydrated, these medicines can stop your kidneys working properly.
  o **Examples:** names ending in ‘sartan’ such as candesartan, irbesartan, losartan, valsartan

Diuretics – these medicines are used for excess fluid and high blood pressure and are sometimes called ‘water pills’. These medicines can make dehydration more likely.
  o **Examples** include bendroflumethiazide, furosemide, indapamide, bumetanide.
  o If you are taking more than two tablets a day of either bumetanide or furosemide, please seek medical advice before stopping

Metformin – this is a medicine for diabetes. Dehydration can make it more likely that you will develop a serious side effect called lactic acidosis

GLP-1 analogues – these are medicines for diabetes. Dehydration can make it more likely that you will develop a serious side effect.
  o **Examples** are exenatide, dulaglutide, liraglutide, lixisenatide and semaglutide

NSAIDs – these are anti-inflammatory pain killers. If you are dehydrated, these medicines can stop your kidneys working properly.
  o **Examples** include ibuprofen, naproxen

SGLT2 inhibitors – these are medicines for diabetes. Dehydration can make it more likely that you will develop a serious side effect called ketoacidosis.
  o **Examples:** names ending with ‘flozin’ such as canagliflozin, dapagliflozin, empagliflozin and ertugliflozin