

Flight planning guide for parents of young people with type 1 diabetes – multi-daily injections

If you are planning airline travel, it's important you carry a *flight letter* to ensure you have no issues with security when flying with diabetes supplies. Flight letters are valid within the calendar year (for multiple flights) and can be requested from 9345 6661 / diabetes@rch.org.au

A flight plan can be a useful tool when travelling between difference time zones (internationally). You are unlikely to need a flight plan if the country you are travelling to is 3 hours or less time difference from you current location as this should not cause too much disruption to your child's insulin regimen. If you are travelling across time zones of more than 3 hours difference to your current location, you will need to plan changes to your child's insulin dosing times.

These guidelines have been prepared to ensure your child has adequate amounts of insulin in their body. During flights, your child's blood glucose (BG) may be outside target levels (4.0 – 7.0 mmol/L), so ensure you always have access to hypo treatment to treat low BGs, and ketone strips for use should BG be over 15.0 mmol/L.

A diabetes nurse educator (DNE) can review the plan before you fly, but a minimum of 2-weeks' notice is required.

Knowing how to develop your own flight plan means you will know what to do for future international travels.

Here is an example of making a flight plan:

Alice Wonder is on NovoRapid with meals and Lantus at 7pm. She is travelling to Lisbon via Dubai late July (see Table 1). There are time differences between Melbourne, Dubai and Lisbon (see Table 2).

There are a number of ways in which this flight plan could be organised:

- Give Lantus when it's due and once the Lantus has 'worn out' (at 7pm), Alice must give 4 hourly NovoRapid until 7pm in Lisbon (when Lantus is due).
- Another option might be to do 4 hourly NovoRapid for the duration of the flight (don't give any Lantus during flight), until 7pm in Lisbon. Alice must give 4 hourly NovoRapid and eat 2-3 serves of carbs with each injection.

Note: Organising a plan for insulin injection is heavily dependent on the flight itinerary

Step 1: Flight itinerary:

	DEPART	FLIGHT DETAILS	ARRIVE	
Melb to Lisbon	Melbourne / MEL Terminal 2 Tullamarine Arpt, Australia Sunday, 24 July 21:25	Emirates EK407 ECONOMY (L) Confirmed (HK)	Dubai / DXB Terminal 3 United Arab Emirates Monday, 25 July 05:30	<div style="border: 1px dashed red; padding: 2px; display: inline-block;">Dubai local time</div>
	Dubai / DXB Terminal 3 United Arab Emirates Monday, 25 July 07:25	Emirates EK191 ECONOMY (L) Confirmed (HK)	Lisbon / LIS Terminal 1 Portugal Monday, 25 July 12:45	
Lisbon to Melb	Lisbon / LIS Terminal 1 Portugal Thursday, 25 August 21:50	Emirates EK194 ECONOMY (T) Confirmed (HK)	Dubai / DXB Terminal 3 United Arab Emirates Friday, 26 August 08:30	
	Dubai / DXB Terminal 3 United Arab Emirates Friday, 26 August 10:10	Emirates EK406 ECONOMY (T) Confirmed (HK)	Melbourne / MEL Terminal 2 Tullamarine Arpt, Australia Saturday, 27 August 05:25	

Step 2: Working out time zones changes visit World clock on the Time and Date website with each of the cities Alice will be travelling to -
<http://www.timeanddate.com/worldclock/meeting.html>:

UTC-time	Melbourne	Dubai	Lisbon
Saturday, 23 July 2016 at 14:00:00	Midnight Sat-Sun	Sat 6:00 PM	Sat 3:00 PM
Saturday, 23 July 2016 at 15:00:00	Sun 1:00 AM	Sat 7:00 PM	Sat 4:00 PM
Saturday, 23 July 2016 at 16:00:00	Sun 2:00 AM	Sat 8:00 PM	Sat 5:00 PM
Saturday, 23 July 2016 at 17:00:00	Sun 3:00 AM	Sat 9:00 PM	Sat 6:00 PM
Saturday, 23 July 2016 at 18:00:00	Sun 4:00 AM	Sat 10:00 PM	Sat 7:00 PM
Saturday, 23 July 2016 at 19:00:00	Sun 5:00 AM	Sat 11:00 PM	Sat 8:00 PM
Saturday, 23 July 2016 at 20:00:00	Sun 6:00 AM	Midnight Sat-Sun	Sat 9:00 PM
Saturday, 23 July 2016 at 21:00:00	Sun 7:00 AM	Sun 1:00 AM	Sat 10:00 PM
Saturday, 23 July 2016 at 22:00:00	Sun 8:00 AM	Sun 2:00 AM	Sat 11:00 PM
Saturday, 23 July 2016 at 23:00:00	Sun 9:00 AM	Sun 3:00 AM	Midnight Sat-Sun
Sunday, 24 July 2016 at 00:00:00	Sun 10:00 AM	Sun 4:00 AM	Sun 1:00 AM
Sunday, 24 July 2016 at 01:00:00	Sun 11:00 AM	Sun 5:00 AM	Sun 2:00 AM
Sunday, 24 July 2016 at 02:00:00	Sun 12:00 Noon	Sun 6:00 AM	Sun 3:00 AM
Sunday, 24 July 2016 at 03:00:00	Sun 1:00 PM	Sun 7:00 AM	Sun 4:00 AM
Sunday, 24 July 2016 at 04:00:00	Sun 2:00 PM	Sun 8:00 AM	Sun 5:00 AM
Sunday, 24 July 2016 at 05:00:00	Sun 3:00 PM	Sun 9:00 AM	Sun 6:00 AM
Sunday, 24 July 2016 at 06:00:00	Sun 4:00 PM	Sun 10:00 AM	Sun 7:00 AM
Sunday, 24 July 2016 at 07:00:00	Sun 5:00 PM	Sun 11:00 AM	Sun 8:00 AM
Sunday, 24 July 2016 at 08:00:00	Sun 6:00 PM	Sun 12:00 Noon	Sun 9:00 AM
Sunday, 24 July 2016 at 09:00:00	Sun 7:00 PM	Sun 1:00 PM	Sun 10:00 AM
Sunday, 24 July 2016 at 10:00:00	Sun 8:00 PM	Sun 2:00 PM	Sun 11:00 AM
Sunday, 24 July 2016 at 11:00:00	Sun 9:00 PM	Sun 3:00 PM	Sun 12:00 Noon
Sunday, 24 July 2016 at 12:00:00	Sun 10:00 PM	Sun 4:00 PM	Sun 1:00 PM
Sunday, 24 July 2016 at 13:00:00	Sun 11:00 PM	Sun 5:00 PM	Sun 2:00 PM

- Organise the table with your departure point first
- Your watch will stay on this time until you reach your destination

Step 3: Guide to managing the young person's diabetes in flight

This is the information needed to develop a flight plan with explanations

This is a guide to managing diabetes while travelling by plane through different time zones.

a. Current insulin doses and total daily dose

Alice's usual insulin regimen:

Rapid-acting insulin

Pre Breakfast	17 units
Pre Lunch	17 units
Pre Dinner	16 units

Long-acting insulin

Evening	29 units
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Total Daily Dose of Insulin (TDD)

Average 79 units

Add up ALL insulin doses for the 24-hour day

b. Ketone management

If blood ketones ≥ 1.0 mmol/L give additional 10% TDD in rapid-acting insulin immediately:

Your additional dose (if required) is **8 units (10% TDD) NovoRapid**

$17 + 17 + 16 + 29 = 79$ units
 $79 \div 10 = 7.9$ (round up) 8 units

c. What to do when the long-acting insulin wears out

Once the long-acting insulin has 'worn off':

To calculate 4 hourly NovoRapid

$TDD \div 6 =$ amount (units) given 4-hourly

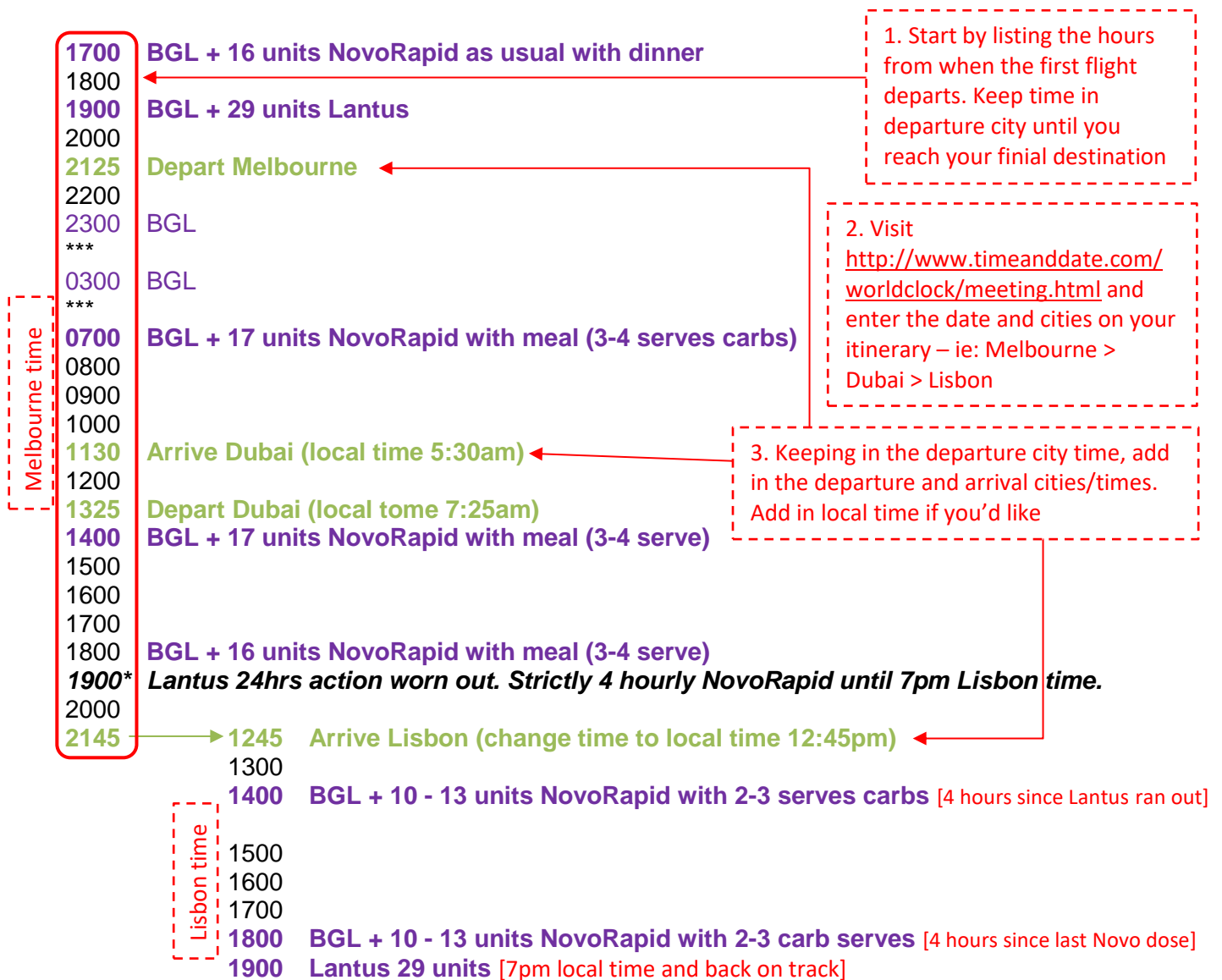
Alice uses NovoRapid as her rapid-acting insulin
 $TDD 79 \text{ units} \div 6 = 13.1^* \text{ units EVERY 4 HOURS}$ with a carb snack (2-3 carb serves).

* round to the nearest whole unit = 13 units NovoRapid

Sunday 24 July 2016

Melbourne – Lisbon (via Dubai)

Please keep your watch on the time of your departure city until you reach your final destination.
BGLs must be tested minimum of 4 hourly, including during sleep time
 – set an alarm clock / watch



*It's very important that Alice has NovoRapid 4-hourly strictly while there is no active Lantus in her system. Once she is back on Lantus from 7pm (above), please revert back to normal doses and timing of insulin from the following morning.

Continue close monitoring of BGLs overnight and tomorrow

In summary:

- Calculate the TDD
 - Calculate the urgent dose if ketones ≥ 1.0 mmol/L & 4-hourly rapid-acting insulin dose
 - List hours in local time of departure city
 - Visit the *time and date* website and generate time zones for each city you are visiting
 - Add departure and arrival times to the flight plan (including stop overs)
 - Decide on the schedule of insulin management (ie: 4 hourly NovoRapid when Lantus worn out) and add this to the flight plan
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Additional travel tips:

Consider comprehensive travel insurance

Please take the time to read the Travelling & Diabetes brochure

Wear a diabetes ID

Take twice as many supplies as you would normally use in the same time frame

Carry insulin, syringes/pen needles and other diabetes supplies (including hypo food/drink) on board with you – divide in two separate carry-on bags. Carry with you at all times.

Drink plenty of water during flight

If unwell, seek medical advice

Insulin cannot be dispensed overseas using an Australian prescription

RCH DIABETES 24 HOURS SERVICE (urgent only): 0061 3 9345 5522

www.rch.org.au/diabetes

Useful websites:

Diabetes Australia travel advice – www.diabetesaustralia.com.au/travel

International Association for medical assistance to travellers – www.imat.org

International society of travel medicine – www.istm.org

Medicare (Australians overseas) – www.humanservices.gov.au/customer/subjects/austliansoverseas

National Diabetes Service Scheme – www.ndss.com.au

Smart Traveller website: <http://smartraveller.gov.au>

Extra notes:

You may need to make changes to insulin doses if you are having frequent hypos or if your blood glucose levels (BGLs) are greater than 15 mmol/L. You will need extra insulin if you develop ketones of 1.0 mmol/L or more.

The purpose of a flight plan is to ensure insulin is given at regular intervals during time zone changes and to change the insulin times in the new time zone.

Please keep your watch on the time of your departure city until you reach your final destination.

When you arrive at your destination, return to your normal insulin doses.

Due to time zone change, the timing of the long-acting insulin may also change.

Guide to dose adjustment during flight:

- If BGLs have been < 4.0 mmol/L during the flight, reduce the rapid-acting dose by 1-2 units
- If BGLs are > 15.0 mmol/L, during the flight you may need to increase the rapid-acting insulin dose by 1-2 units
- Make sure you test for blood ketones when BGL ≥ 15.0 mmol/L
 - If blood ketones ≥ 1.0 mmol/L give additional 10% TDD in rapid-acting insulin immediately

BGL monitoring during the flight:

Before meals/insulin

4 hourly, including during sleep time – set an alarm clock / watch

Test for blood ketone if ≥ 15.0

Equipment during the flight: (in hand/carry-on luggage)

- Take a combined blood glucose & ketone meter (Freestyle meter), and test strips
 - Take your insulin/s – rapid-acting and long-acting pens/penfills and pen needles/syringes
 - Small sharps container for pen needles/syringes
 - Hypoglycaemia treatment
 - Extra snacks for the flight journey
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