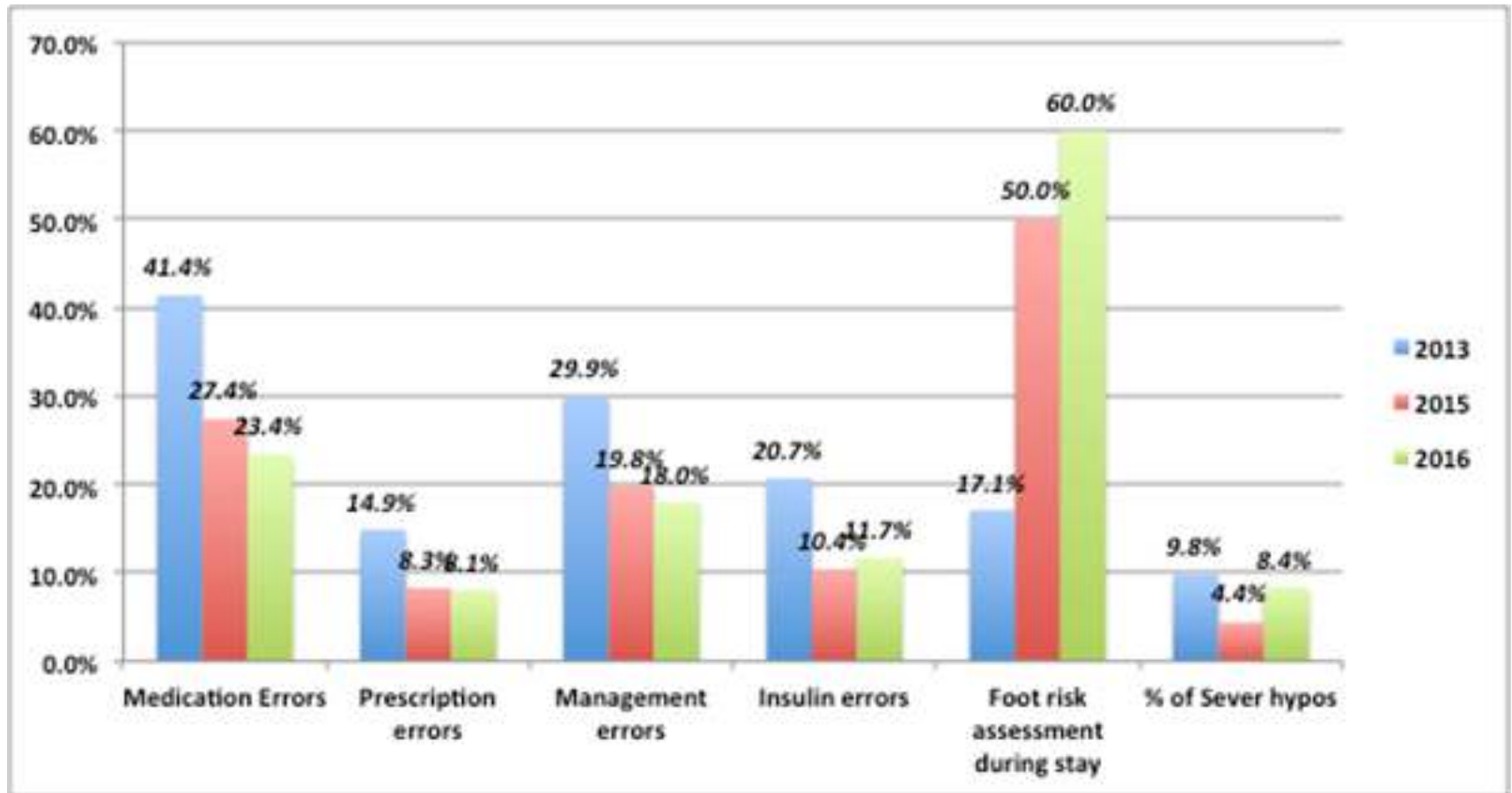


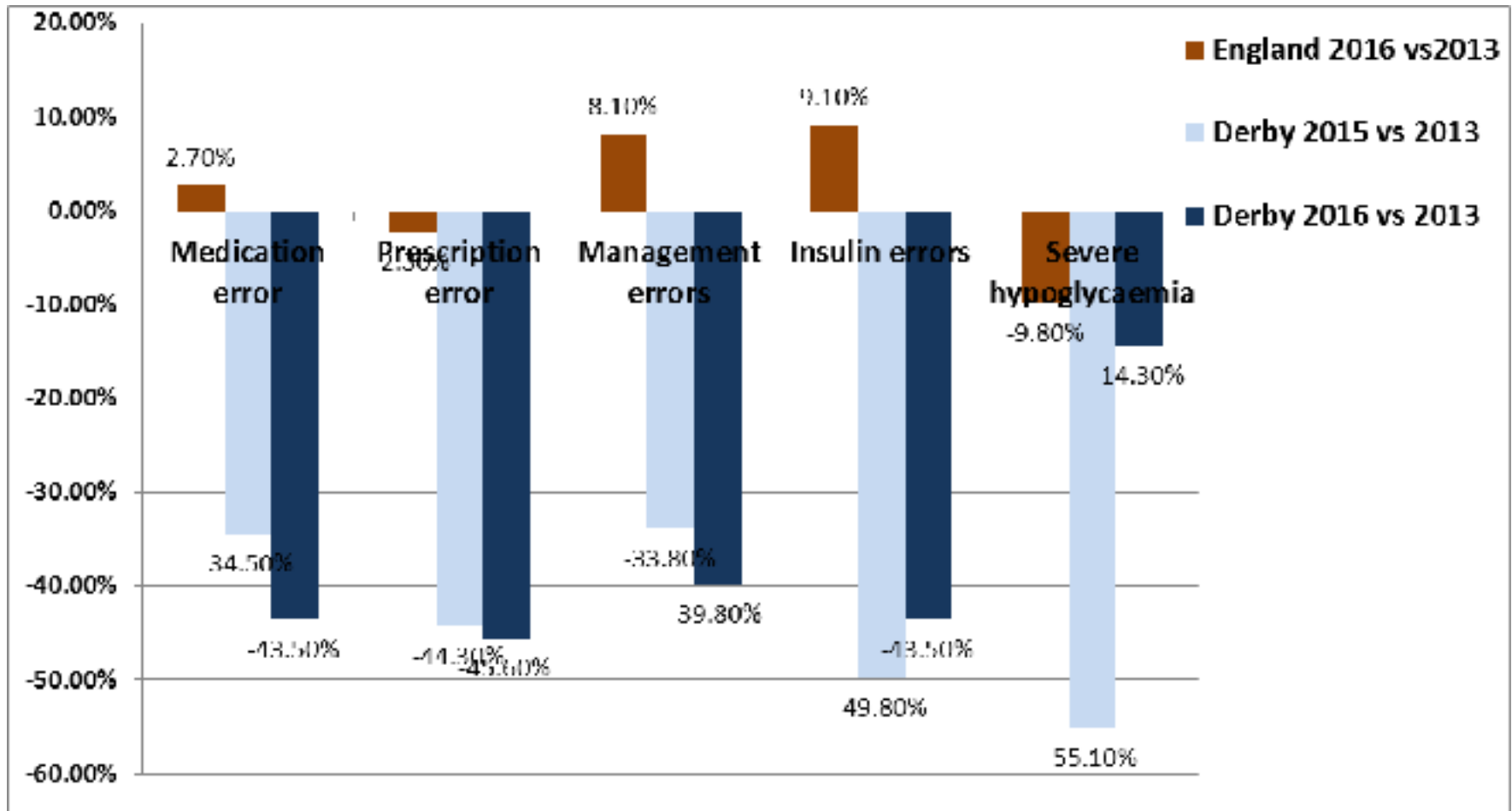
## Supporting material - NADIA report comparison 2013 vs 2015 and 2016

| <b><i>Area of improvement-<br/>NaDIA</i></b>       | <b><i>2013</i></b>  | <b><i>2015</i></b>          | <b><i>2016</i></b>      |
|--|---------------------|-----------------------------|-------------------------|
| <b><i>Medication Errors</i></b>                    | <b><i>41.4%</i></b> | <b><i>27.4% ( ↓ ↓ )</i></b> | <b><i>23.4% (↓)</i></b> |
| <b><i>Prescription errors</i></b>                  | <b><i>14.9%</i></b> | <b><i>8.3% ( ↓ ↓ )</i></b>  | <b><i>8.1%(↓)</i></b>   |
| <b><i>Management errors</i></b>                    | <b><i>29.9%</i></b> | <b><i>19.8%( ↓ ↓ )</i></b>  | <b><i>18%(↓)</i></b>    |
| <b><i>Insulin errors</i></b>                       | <b><i>20.7%</i></b> | <b><i>10.4%( ↓ ↓ )</i></b>  | <b><i>11.7%(↑)</i></b>  |
| <b><i>Foot risk assessment<br/>during stay</i></b> | <b><i>17.1%</i></b> | <b><i>50%(↑ ↑ )</i></b>     | <b><i>60%(↑)</i></b>    |
| <b><i>% of Severe hypos</i></b>                    | <b><i>9.8%</i></b>  | <b><i>4.4%( ↓ ↓ )</i></b>   | <b><i>8.4%(↓)</i></b>   |

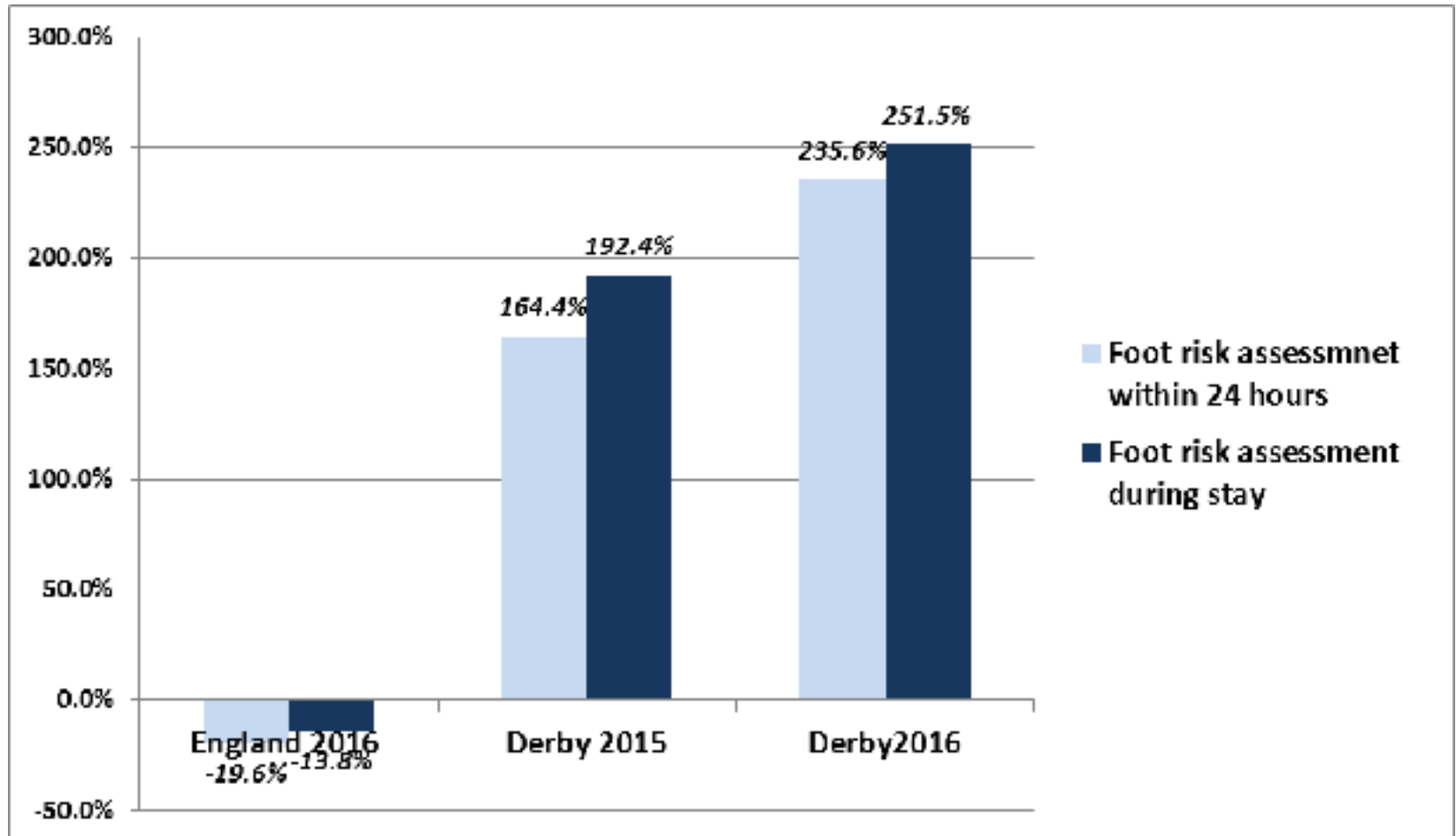
# NADIA results for Derby 2013, 2015 and 2016



# Percentage change in errors (NADIA). comparing England 2016, Derby 2016 & 2015 vs 2013



# Percentage change in Foot risk assessments- NADIA 2013 vs 2015 and 2016



## Supporting material - Email from NADIA team congratulating on the improvement

We received an email from NADIA HSCIC (HEALTH AND SOCIAL CARE INFORMATION CENTRE)

*Dear Colleagues,*

*We are writing to you regarding the recent publication of the National Diabetes Inpatient Audit (NaDIA) 2015 results for **Royal Derby Hospital**. After analysing the recently published hospital level results of the audit, we were pleased to find that the hospital has improved significantly in the below areas:*

| <b>Area of Improvement</b>              | <b>2013 (%)</b> | <b>2015 (%)</b> |
|---|-----------------|-----------------|
| <i>Medication errors</i>                | <i>41.4%</i>    | <i>27.1%</i>    |
| <i>Prescription errors</i>              | <i>14.9%</i>    | <i>8.3%</i>     |
| <i>Management errors</i>                | <i>29.9%</i>    | <i>19.8%</i>    |
| <i>Insulin errors</i>                   | <i>20.7%</i>    | <i>10.4%</i>    |
| <i>Foot risk assessment during stay</i> | <i>17.1%</i>    | <i>50.0%</i>    |
| <i>% Severe hypo</i>                    | <i>9.8%</i>     | <i>4.4%</i>     |

*Firstly, we would like to congratulate you on the improvements outlined above and the work you have been doing to improve these areas.*

# Email from Medical Director conveying appreciation from the Trust Board

**Subject:** National Diabetes Audit - Thanks from the Board

Dear All,

At Trust Board yesterday, the results of the latest national Diabetes Inpatient Audit were described in the quality report. The Trust Board asked me to pass on their appreciation and thanks for the excellent work of the Insulin Safety Group in improving outcomes of our patients and placing the Trust in the best quartile in so many categories

Well done indeed!

Best wishes

Nigel

Dr Nigel Sturrock

Executive Medical Director

# Supporting material - Electronic prescription screen shot

[Patient List](#) | [Orders](#) | [Results](#) | [Documents](#) | [Observations](#) | [Patient Info](#) | [Summary](#) | [ECG images](#) | [E-Case note](#) | [PACS images](#) | [eReflex](#)

Order: All    Status: All

Patient:

Date Range:

To:

Study:

Order Selector:

[Show New Orders...](#)

Display Format:

| Order  | Order    | Status              | Order          |
|--|----------|---------------------|----------------|
| LANTUS (Insulin Glargine) -<br>Solostar (Disposable Pen)<br>116 Units<br>Structure: Insulin Dosing ONCE daily at 8pm Subcutaneous  | 19-Jan-7 | Active Master Order |                |
| NOVOTRAFID (Insulin Aspart) -<br>Flexpen (Disposable Pen)<br>11 - 41 Units<br>Structure: Insulin Dosing THREE times a day<br>(Eam: 1pm, 6pm) Subcutaneous<br>if premeal glucose high please give Novotrafid as follows<br>Glucose 12-14.9-1 unit x/4, 15-17.9-2 units, 18-20.9-3<br>units, >21 - 4 units | 19-Jan-7 | Active Master Order |                |
| NOVOTRAFID (Insulin Aspart) -<br>Flexpen (Disposable Pen)<br>4 Units<br>Structure: Insulin Dosing ONCE IMMEDIATELY (STAT)<br>Subcutaneous  | 18-Jan-7 | Completed           |                |
| LANTUS (Insulin Glargine) -<br>Solostar (Disposable Pen)<br>116 Units<br>Structure: Insulin Dosing ONCE daily at 8pm Subcutaneous  | 11-Jan-7 | Active Master Order |                |
| HUMULIN M3 (Human Insulin B prandial)<br>Kwikpen (Disposable Pen)<br>20 Units<br>Structure: Insulin Dosing ONCE Daily at 8am Subcutaneous<br>Give with Food  | 17-Jan-7 | Discontinued        | 18-Jan-7 09:54 |
| HUMULIN M3 (Human Insulin B prandial)<br>Kwikpen (Disposable Pen)<br>14 Units<br>Patient Managed Dosing ONCE daily at 8am Subcutaneous<br>Give with Food   | 15-Jan-7 | Discontinued        | 18-Jan-7 09:54 |

[illegible]



[illegible]

Administered At

Date: 18-Jan-2017 Time: 18:00

Supporting material - EPMA  
screen shot 4

Task Information

Task: LANTUS (Insulin Glargine) -  
Solostar (Disposable Pen)

Start Date/Time: 18-Jan-17 09:58

Stop Date/Time:

Advisory Message

...

|  |  |                            | 18Jan17              |  |
|--|--|----------------------------|----------------------|--|
|  |  | Observation                | 18:00                |  |
|  |  | Blood Glucose Level        | 26.9 mmols           |  |
|  |  | Time of last Blood Glucose | 17:00                |  |
|  |  | Insulin Administered       | Other (please spe... |  |
|  |  | Dose of Insulin Given      | 16 Unit(s)           |  |
|  |  | Patient Self Administered  | No                   |  |
|  |  | Additional Comments        |                      |  |

Performed By: Eaton, Tina ( Nurse )

Entered By:

OK

Cancel

Calculate

View Comment

Item Info

Help

# Supporting material - Ward assurance data

|            | Apr-15  | May-15  | Jun-15  | Jul-15  | Aug-15  | Nov-15 | Dec-15 | Jan-16 | Feb-16 | Mar-16 | Apr-16 | May-16 | Jun-16 |
|------------|---------|---------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| Continence | 94.29%  | 97.46%  | 97.52%  | 96.19%  | 96.28%  | 94.66% | 92.92% | 94.11% | 95.63% | 96.12% | 94.75% | 96.16% | 96.27% |
| Control    | 95.35%  | 97.81%  | 96.99%  | 95.93%  | 97.71%  | 93.55% | 95.00% | 93.94% | 96.95% | 92.31% | 95.90% | 97.56% | 98.29% |
| Diabetes   | No Data | No Data | No Data | No Data | No Data | 29.73% | 42.11% | 29.65% | 25.23% | 32.46% | 32.28% | 39.35% | 59.90% |
| Dignity    | 98.72%  | 99.10%  | 99.20%  | 98.99%  | 99.30%  | 98.53% | 99.21% | 98.81% | 98.85% | 99.09% | 98.30% | 98.80% | 99.06% |
| Discharge  | 94.07%  | 94.21%  | 93.35%  | 94.12%  | 85.33%  | 83.06% | 82.84% | 84.78% | 92.15% | 93.16% | 94.47% | 92.99% | 93.77% |
| Falls      | 98.41%  | 97.42%  | 98.90%  | 97.85%  | 98.74%  | 97.04% | 96.98% | 96.16% | 97.12% | 97.37% | 95.93% | 95.57% | 97.10% |
| IPC        | 96.36%  | 96.05%  | 95.98%  | 95.64%  | 95.29%  | 92.08% | 96.90% | 95.29% | 96.37% | 96.43% | 96.22% | 96.61% | 97.70% |
| Medicine   | 94.68%  | 95.59%  | 95.00%  | 92.48%  | 92.53%  | 88.74% | 91.27% | 91.39% | 92.70% | 91.73% | 92.40% | 91.86% | 92.06% |

# Supporting material - Insulin profile chart adapted from Think Glucose



## Typical Insulin Profiles

| Insulin Type                       | Proprietary Name - see when prescribing | Manufacturer  | Device                                  | Taken                                | Onset      | Peak          | Duration      | Typical activity profiles |
|------------------------------------|---|---------------|---|--------------------------------------|------------|---------------|---------------|---------------------------|
| Rapid-acting analogue insulins     |   |               |   |                                      |            |               |               |                           |
| Insulin Aspart                     | NovoRapid®                              | Novo Nordisk  | Via, Flexpen, cartridge                 | Just before, with or just after food | 10-20 mins | 1-3 hrs       | 2-5 hrs       |                           |
| Insulin Lispro                     | Humalog®                                | Lilly         | Via, Flexpen, cartridge                 |                                      |            |               |               |                           |
| Insulin Glargine                   | Apidra®                                 | SanoI-Aventis | Via, Solostar pen, cartridge /a Optimer |                                      |            |               |               |                           |
| Short-acting insulins              |   |               |   |                                      |            |               |               |                           |
| Insulin - soluble (neutral)        | Actrapid®                               | Novo Nordisk  | Via                                     | 15-30 mins before food               | 30-60 mins | 1-3 hrs       | 6-8 hrs       |                           |
|                                    | Humulin S®                              | Lilly         | Via, cartridge                          |                                      |            |               |               |                           |
|                                    | Insulin® Rapid                          | SanoI-Aventis | Cartridge                               |                                      |            |               |               |                           |
|                                    | Hypurin® Bovine Neutral                 | Woodward      | Via, cartridge                          |                                      |            |               |               |                           |
|                                    | Hypurin® Porcine Neutral                | Woodward      | Via                                     |                                      |            |               |               |                           |
| Intermediate-acting insulins       |   |               |   |                                      |            |               |               |                           |
| Isophane insulin                   | Hypurin® Bovine Isophane                | Woodward      | Via, cartridge                          | About 30 mins before food or bedtime | 30-60 mins | 2-12 hrs      | 12-14 hrs     |                           |
|                                    | Hypurin® Porcine Isophane               | Woodward      | Via, cartridge                          |                                      |            |               |               |                           |
|                                    | Insulin®                                | Novo Nordisk  | Via, Insulin pen, cartridge             |                                      |            |               |               |                           |
|                                    | Humulin I®                              | Lilly         | Via, Kwikpen, cartridge                 |                                      |            |               |               |                           |
|                                    | Insulin® Basal                          | SanoI-Aventis | Via, Solostar pen, cartridge            |                                      |            |               |               |                           |
| Long-acting analogue insulins      |   |               |   |                                      |            |               |               |                           |
| Insulin Determir                   | Lantus®                                 | Novo Nordisk  | Flexpen, cartridge                      | Once or twice a day                  | 2-4 hrs    | 2-14 hrs peak | 10-20 hrs     |                           |
| Insulin Glargine                   | Lantus®                                 | SanoI-Aventis | Solostar pen, cartridge                 |                                      |            |               | 20-24 hrs     |                           |
| Insulin Degludec                   | Treclar®                                | Novo Nordisk  | FlexTouch Pen                           | Once a day                           | 30-60 mins | No peak       | Over 42 hours |                           |
| Mixed insulins - Biphase:          |   |               |   |                                      |            |               |               |                           |
| Biphasic insulin aspart (analogue) | NovoMix® 30                             | Novo Nordisk  | Flexpen, cartridge                      | Just before, with or just after food | 10-20 mins | 1-4 hrs       | Up to 24 hrs  |                           |
| Biphasic insulin Lispro (analogue) | Humalog® Mix 25<br>Humalog® Mix 50      | Lilly         | Kwikpen, cartridge                      |                                      |            |               |               |                           |

### U500 Insulin (Humulin R®)

This insulin is unlabeled and is five times more concentrated than standard (U100) insulin; it should be initiated by a diabetes consultant only.

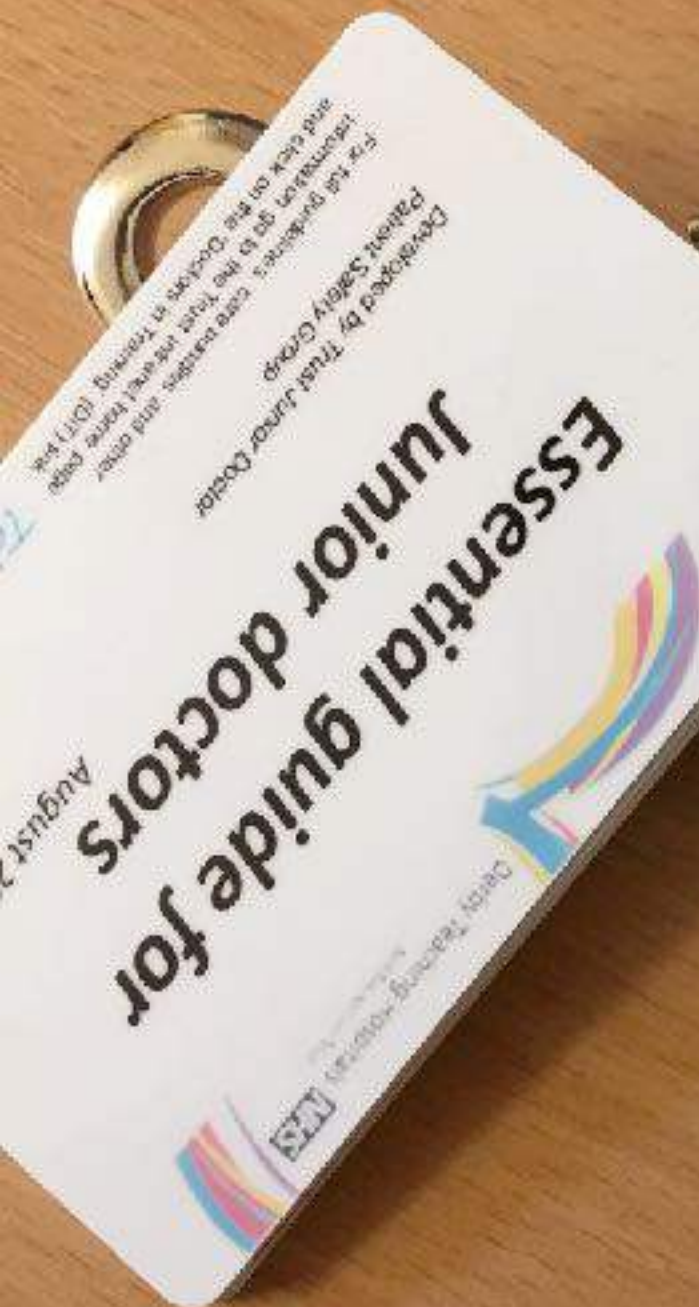
It is prescribed in marks and needs to be administered via a 0.5 or 0.5mL insulin syringe.

(One mark on one of these syringes is equivalent to 5 units of insulin).

All patients admitted on U500 insulin should be referred to the diabetes team via ICM.

REFER TO DIABETES TEAM  
Refer to diabetes inpatient nursing team via ICM.  
Telephone contact: 01332 353333 / 353334

# Supporting material - Pocket guide for junior doctors and nurses



| TYPICAL INSULIN PROFILES            |                              |   |                                      |            |                              |
|-------------------------------------|------------------------------|---|--------------------------------------|------------|------------------------------|
| Insulin Type                        | Formulation Name             | Device                                    | When Taken                           | Onset      | Peak Duration                |
| <b>Short-acting insulins</b>        |                              |   |                                      |            |                              |
| Insulin Aspart                      | Novolog <sup>®</sup>         | Vial, Flexpen, Cartridge                  | Just before, with or just after food | 10-20 mins | 1-3 hrs 2-5 hrs              |
| Insulin Lispro                      | Humalog <sup>®</sup>         | Vial, Mixtard Pen, Cartridge              |                                      |            |                              |
| Insulin Glargine                    | Lantus <sup>®</sup>          | Vial, Solostar Pen, Cartridge for Optipen |                                      |            |                              |
| <b>Intermediate-acting insulins</b> |                              |   |                                      |            |                              |
|                                     | Actrapid <sup>®</sup>        | Vial                                      |                                      |            |                              |
|                                     | Humulin S <sup>®</sup>       | Vial, Cartridge                           |                                      |            |                              |
| Insulin-soluble/Neutral             | Insulin <sup>®</sup> Rapid   | Cartridge                                 | 15-30 mins before food               | 10-60 mins | 2-5 hrs 5-8 hrs              |
|                                     | Hypurin <sup>®</sup> Bouvise | Vial, Cartridge                           |                                      |            |                              |
|                                     | Neutral                      |   |                                      |            |                              |
|                                     | Hypurin <sup>®</sup> Parane  | Vial                                      |                                      |            |                              |
|                                     | Neutral                      |   |                                      |            |                              |
| <b>Intermediate-acting insulins</b> |                              |   |                                      |            |                              |
|                                     | Hypurin <sup>®</sup> Bouvise | Vial, Cartridge                           | About 30 mins before food or bedtime | 60-90 mins | 1-12 hrs 12-24 hrs           |
| Isophane insulin                    | Hypurin <sup>®</sup> Parane  | Vial, Cartridge                           |                                      |            |                              |
|                                     | Isophane                     |   |                                      |            |                              |
|                                     | Insulin <sup>®</sup> Rapid   | Vial, Insulet Pen, Cartridge              |                                      |            |                              |
|                                     | Humulin <sup>®</sup>         | Vial, Novolog Pen, Cartridge              |                                      |            |                              |
|                                     | Insulin <sup>®</sup> Basal   | Vial, Solostar Pen, Cartridge             |                                      |            |                              |
| <b>Long-acting insulins</b>         |                              |   |                                      |            |                              |
| Insulin Determir <sup>®</sup>       | Levemir <sup>®</sup>         | Flexpen, Cartridge                        | Once or twice a day                  | 2-4 hrs    | 6-18 hrs 18-20 hrs 20-24 hrs |
| Insulin Glargine                    | Lantus <sup>®</sup>          | Solostar Pen, Cartridge                   |                                      |            |                              |
| Insulin Degludec                    | Tresiba <sup>®</sup>         | FlexTouch Pen                             | Once a day                           | 30-60 mins | Not peak 42hrs               |



# Supporting material - Pocket guide for junior doctors and nurses

nurses

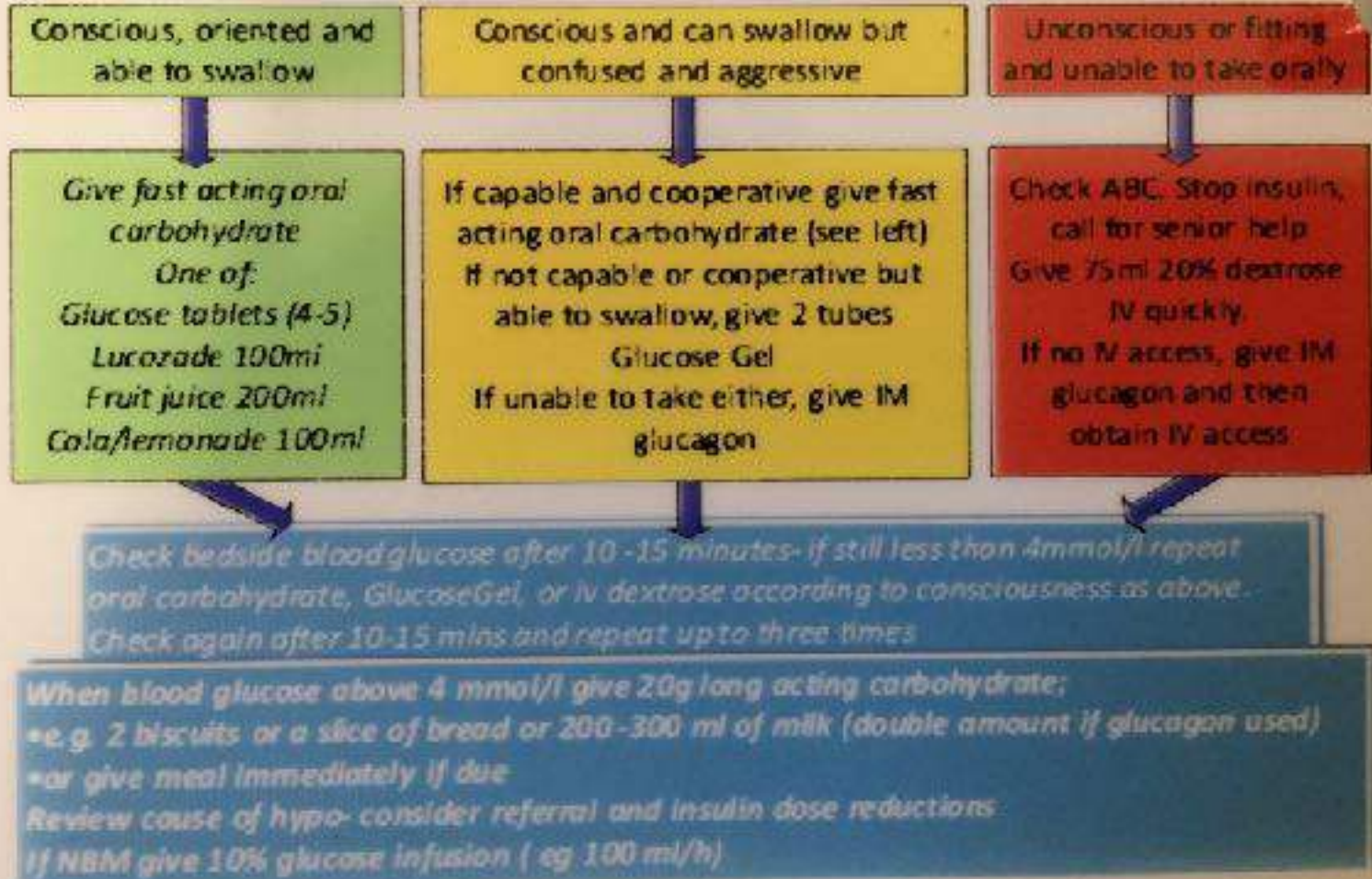
TYPICAL INSULIN

| Insulin Type                          | Proprietary Name          | Device                                    | Taken                                | Onset      | Peak     | Duration    |
|---------------------------------------|---------------------------|---|--------------------------------------|------------|----------|-------------|
| <b>Short-acting analogue insulins</b> |                           |   |                                      |            |          |             |
| Insulin Aspart                        | NovoRapid®                | Vial, Flexpen, Cartridge                  | Just before, with or just after food | 10-20 mins | 1-3 hrs  | 2-5 hrs     |
| Insulin Lispro                        | Humalog®                  | Vial, Kwikpen, Cartridge                  |                                      |            |          |             |
| Insulin Glulisine                     | Apidra®                   | Vial, Solostar Pen, Cartridge for Optipen |                                      |            |          |             |
| <b>Short-acting insulins</b>          |                           |   |                                      |            |          |             |
| Insulin-soluble/neutral               | Actrapid®                 | Vial                                      | 15-30 mins before food               | 30-60 mins | 1-5 hrs  | 5-9 hrs     |
|                                       | Humulin S®                | Vial, Cartridge                           |                                      |            |          |             |
|                                       | Insuman® Rapid            | Cartridge                                 |                                      |            |          |             |
|                                       | Hypurin® Bovine Neutral   | Vial, Cartridge                           |                                      |            |          |             |
|                                       | Hypurin® Porcine Neutral  | Vial                                      |                                      |            |          |             |
| <b>Intermediate-acting insulins</b>   |                           |   |                                      |            |          |             |
| Isophane insulin                      | Hypurin® Bovine Isophane  | Vial, Cartridge                           | About 30 mins before food or bedtime | 60-90 mins | 2-12 hrs | 12-24 hrs   |
|                                       | Hypurin® Porcine Isophane | Vial, Cartridge                           |                                      |            |          |             |
|                                       | Insulatard®               | Vial, Innolet Pen, Cartridge              |                                      |            |          |             |
|                                       | Humulin I®                | Vial, Kwikpen, Cartridge                  |                                      |            |          |             |
|                                       | Insuman® Basal            | Vial, Solostar Pen, Cartridge             |                                      |            |          |             |
|                                       |                           |   |                                      |            |          |             |
| <b>Long-acting analogue insulins</b>  |                           |   |                                      |            |          |             |
| Insulin Determir                      | Levemir®                  | Flexpen, Cartridge                        | Once or twice a day                  | 2-4 hrs    | 6-14 hrs | 16-20 hrs   |
| Insulin Glargine                      | Lantus®                   | Solostar Pen, Cartridge                   |                                      |            | No peak  | 20-24 hrs   |
| Insulin Degludec                      | Tresiba®                  | Flextouch Pen                             | Once a day                           | 30-90 mins | No peak  | Over 42 hrs |

# Supporting material - Pocket guide for junior doctors and nurses

## ACUTE HYPOGLYCAEMIA

*Hypoglycaemia - blood glucose <4mmol/l*

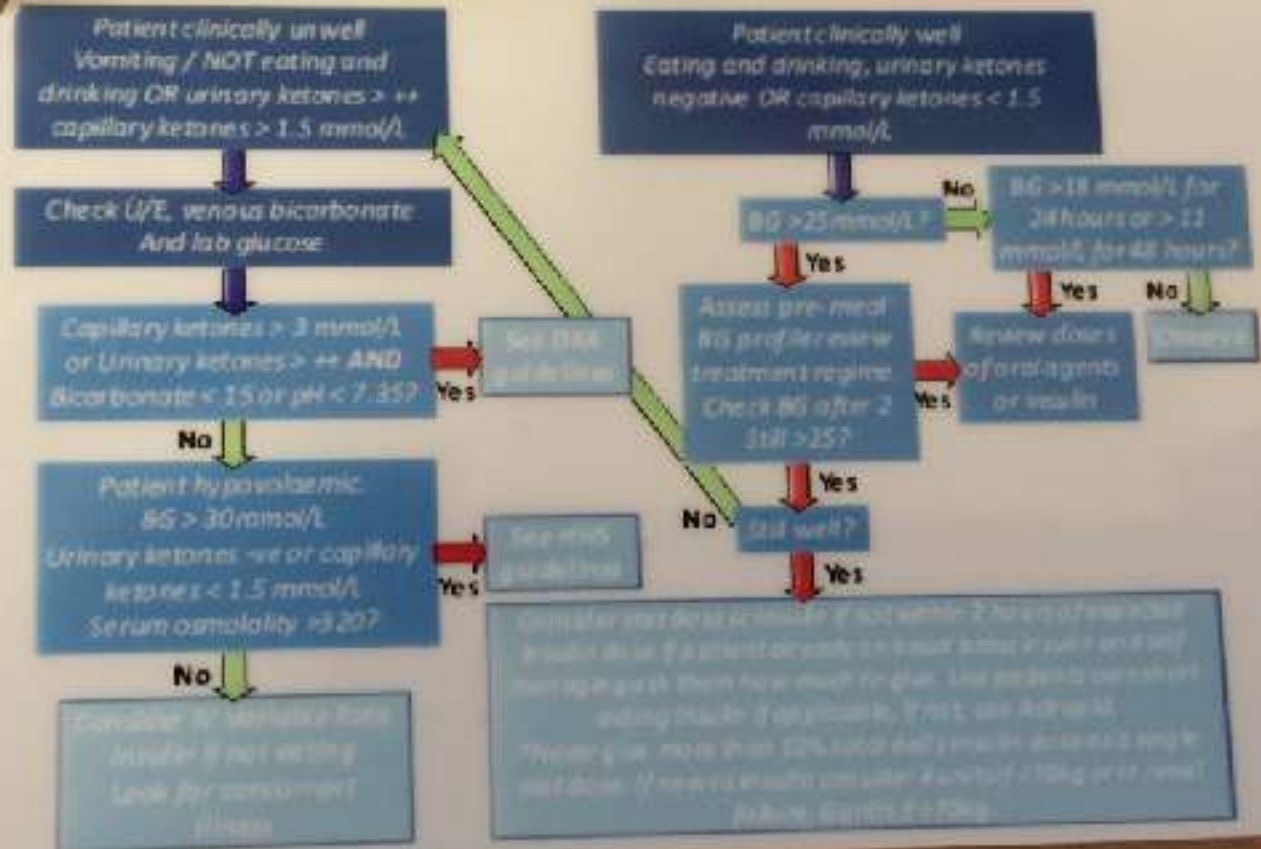




# Supporting material - Pocket guide for junior doctors and nurses

## ACUTE HYPERGLYCAEMIA IN DIABETICS

Look for causes – Consider intercurrent illness or missed oral hypoglycaemics





Supporting material - An initiative by one of the staff nurses in an oncology ward to improve ward assurance. Evidence of impact on other staff members in the hospital

