Supporting patient and technology driven diabetes care models – Lessons from DIY APS

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Disclosures

• Non-promotional educational talks and educational advisory roles fees from
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• The slides and views expressed are my own
Technology driven and patient led care models?

- Serious challenges for health care systems – solutions?
Why DIY APS?

Manual diabetes:

1. Read data from CGM
2. Read data from pump
3. Do math about what action is needed
4. Give more/less insulin, or eat food
5. Do it again... and again... and again...

Figure taken with permission from Lewis D, Automated Insulin Delivery, ISBN 9781797763699, https://www.artificialpancreasbook.com Dana Lewis 2019
Why DIY APS?

Figure adapted with permission from Lewis D, Automated Insulin Delivery, ISBN 9781797763699, https://www.artificialpancreasbook.com Dana Lewis 2019 and taken from Marshall, Holloway, Korer, Woodman, Brackenridge, Hussain, Diabetes Ther. 2019

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Why DIY APS?

• Evidence?
  – 24 publications relating to DIY APS or related aspects
  – Mostly data from self-reported outcomes
  – Data from these studies highlight that compared to conventional methods, DIY APS can offer:

• Increased time in range
• Reduced glucose variability
• Reduced episodes of hypoglycaemia

• Less reliance on accuracy of carbohydrate counting
• Improved overnight control
• Reduced mental burden

Jennings, Hussain, JDST 2019 (under review)
Why DIY APS? - Clinical experience

• Constraints in commercially approved systems

Aleppo, Webb, Endocr Pract 2018

• Experience of DIY APS in clinical situations including:
  – Intensive or prolonged exercise
  – Pregnancy
  – Young infants
  – Steroid treatment
  – Surgery
  – Fasting

Marshall, Holloway, Korer, Woodman, Brackenridge, Hussain, Diabetes Ther 2019
Jennings, Hussain JDST (under review)  #DPC2019 @sugarydoc
Why DIY APS? - Clinical experience

Slide and data courtesy of Dr. Emma Wilmot, Derby

Tauschmann et al. Lancet 2018
Ethical legal and regulatory constraints

Consensus from various statements produced on DIY technology use for HCPs

<table>
<thead>
<tr>
<th>Issues</th>
<th>Guidance for Healthcare professionals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescribing</td>
<td>Not regulated and not medically approved</td>
</tr>
<tr>
<td></td>
<td>Cannot prescribe, promote, initiate or recommend</td>
</tr>
<tr>
<td></td>
<td>Must only recommend authorised technology</td>
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<tr>
<td>Discussing</td>
<td>Should discuss if discussion raised by person with diabetes or carer, especially risks and medically unregulated status</td>
</tr>
<tr>
<td>Supporting</td>
<td>Respect the right of individuals to choose how they wish to manage their or their dependant's diabetes</td>
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<tr>
<td></td>
<td>Continue to support and provide regulated devices (pump, CGM, flash GM) if meet criteria even if patient intends to pursue DIY</td>
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<tr>
<td></td>
<td>Cannot help with procurement of medical equipment other than approved systems</td>
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<tr>
<td></td>
<td>Can help with evaluation of glucose values and insulin dosing via information from DIY platforms but may not provide advice on DIY settings</td>
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<tr>
<td></td>
<td>Cannot refer to unregulated information sources</td>
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<td></td>
<td>Should direct PWD to online DIY technology communities for advice</td>
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<tr>
<td>Documenting</td>
<td>Ensure clear documentation of discussions with patients or carers, especially discussions regarding risks and unregulated status of DIY technologies</td>
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Jennings, Hussain JDST (under review)
Implications for healthcare systems?

• HCP Training and awareness

• Implications for HCPs
  – HCP role – facilitating and supporting
  – Increased initial training with less need for ongoing patient-HCP interaction
    – Responsive DIY Community support
  – More time to focus on other concerns during clinic visits

“Read the docs” – For Clinicians

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Systemic changes needed

- Current paradigm can not support patient and technology driven models
  - Research and research models
  - Reporting mechanisms
  & data registries
  - Regulatory processes

- Other big issues:
  - Simplification and wider applicability?
  - Access to technologies for type 1 diabetes
Automated diabetes – the future?

The present: Hybrid closed loop DIY artificial pancreas systems are here
>1569 users world wide (OpenAPS Outcomes)

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