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Evaluation of an RCT web-based intervention for adherence in cystic fibrosis

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Presenter Disclosure

Helen White PhD

The following relationship exists related to this presentation:

- *Gilead Science - Grant support [Grant No. IN-UK-205-D001]*
- *UKCRN Portfolio ID 13624*
Background

• Reported adherence rates in CF are as low as 40-50%.
• In our own adult patient (n = 410) adherence is 63% (medication possession ratio) White et al (2017).
• On-line adherence programmes for adults with CF have not yet been fully evaluated.
• We aimed to determine the impact on adherence of a web-based intervention for adults with CF.

White H, Shaw N, Denman S, Pollard K, Wynne S, Peckham DG. (2017) Variation in lung function as a marker of adherence to oral and inhaled medication in cystic fibrosis European Respiratory Journal 2017 Mar 8;49(3).
Phase 1 (Module development)

- 6 on-line modules developed
- 40 video stories filmed and embedded within all giving reasons to change and motivations to take treatment eg
  - Parenthood
  - Further study
  - Availability for new treatments
Development

• Interactive material
• Integrated ‘drag and drop’, games, quiz
  – Nutrition
  – Pancreatic enzyme replacement therapy
  – Vitamins
  – Airways & treatments
  – Antibiotics
  – Liver disease
2nd phase - RCT design

- Usual care or web-based intervention (n=100)
- Participants issued with tablet technology
- Granted structured access over 12 months
- Modules released at intervals
- Access tracked on-line
- Facility to gather participant feedback on the system
Results

• Data collected at baseline, 6 months and 1 year
  – **Adherence (Medication possession ratio)** *
  – Knowledge questionnaire *
  – QoL (CFQ-R) *
  – Anthropometric data
  – Respiratory function \([\text{FEV}_1(\%) \text{, } \text{FVC}(\%) \text{, } \text{FEV}_1 \text{ rate of decline (\%) and coefficient variation } \text{FEV}_1(\%)]\)
  – Fat soluble vitamin status

* Collected at baseline and 1 year only
# Interim results

## Baseline

<table>
<thead>
<tr>
<th></th>
<th>Intervention n=31</th>
<th>Control n=29</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (male)</td>
<td>16 (51.6%)</td>
<td>15 (51.7%)</td>
<td>NS</td>
</tr>
<tr>
<td>Age (years)</td>
<td>27.0</td>
<td>30.6</td>
<td>P=0.51</td>
</tr>
<tr>
<td>Pseudomonas</td>
<td>67.7%</td>
<td>62%</td>
<td>P=0.79</td>
</tr>
<tr>
<td>CFRD (%)</td>
<td>12 (38.7%)</td>
<td>13 (44.8%)</td>
<td>P=0.028</td>
</tr>
<tr>
<td>Genotype DF508/DF508 (%)</td>
<td>18 (58.1%)</td>
<td>18 (64.3%)</td>
<td>P=0.61</td>
</tr>
<tr>
<td>FEV₁ (%)</td>
<td>39% (±17.5)</td>
<td>50.4% (±21.2)</td>
<td>P=0.028</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>20.0 (±3.0)</td>
<td>24.6 (±5.3)</td>
<td>P=0.001</td>
</tr>
<tr>
<td>Adherence (MPR) (%)</td>
<td>66% (±24.6)</td>
<td>54% (±28.6)</td>
<td>P=0.43</td>
</tr>
<tr>
<td>Baseline knowledge (%)</td>
<td>64.7% (±13.8)</td>
<td>58% (±2.8)</td>
<td>P=0.61</td>
</tr>
</tbody>
</table>

## Knowledge

![Knowledge Graph]

- **PERT**
- **Vitamins**
- **Liver**
- **Airways**
- **Nutrition**

The graph shows the percentage of knowledge for each subject area.
Interim data – 6 months

Significance adjusted for baseline measure, BMI, Age and lung function
Conclusion

• A web based adherence intervention has shown
  – Improved trends in Vitamin A,D, (but no significant changes in values at 6 months above controls)
    • Significant improvements for those with suboptimal Vitamin levels at baseline were shown
  – No changes in lung function, variation in lung function or rate of lung decline above that of controls
  – No changes in BMI above that of controls

  – Full evaluation at 1 year is now required