Day patient and home treatment for adolescents with anorexia nervosa

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May I introduce myself?

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Different health care politics lead to different admission strategies...

Inpatient treatment (IP)

D: actual treatment of choice, especially in adolescents (body weight BMI \( \leq 3^{\text{rd}} \) percentile, persistent or rapid weight loss, lack of insight into the illness, high psychiatric comorbidity, failure of outpatient treatment, etc.).

NL: „stepped care model“, but „the lower levels of stepped care should not be applied in AN“

UK: „outpatient treatment for most patients with AN“, but „the need for IP and the need for urgent weight restoration should be balanced alongside the educational and social needs of a young person“
European reality: Admission rates

- In the **UK** admission rates for adolescents **nearly doubled** from 2010/11 and 2013/2014 (National Health Service Statistics 2015)
- Increase of admissions to inpatient treatment for childhood and adolescent AN in **Germany**:

![Graph showing case numbers per 100,000 inhabitants for different age groups over years 2000 to 2013.](image)

(German Institute for Federal Statistics, www.gbe-bund.de)
Why comparing DP to inpatient treatment?

1. With the exception of family therapy there is a dearth of studies on the treatment of adolescent AN (Watson & Bulik 2013)

2. Inpatient setting (IP) is considered the treatment of choice especially for severely undernourished patients (APA 2006, NICE 2004)

3. Results of follow-up studies have challenged this opinion (e.g., Gowers et al. 2000; Gowers et al. 2007)

4. Only few studies on day patient treatment with small sample sizes exist, but are on the rise (Hepburn & Wilson 2014)
Why day patient (DP) treatment?

Possible advantages of day patient in comparison to inpatient treatment

1) New skills obtained in treatment might be more easily transferred home;
2) More involvement of the family
3) Living with the family and remaining in social networks;
4) More age-appropriate development of autonomy;
5) Significant lower health-care costs
Wide range of DP programmes...

**Duration:**
- from one to several months to three quarters of a year...

**Intensity:**
- only afternoon or morning programs to 4 - 7 full day visits/week

**Patients:**
- rather severely to moderately ill to weight-stabilized (stepped care programs)

(e.g. Madden et al. 2015)
Decision for a multicenter randomized controlled trial to compare IP to a stepped care full time day patient treatment program in adolescent non-chronic AN.
Inclusion criteria for randomized trial – comparison of inpatient and day patient setting -

• AN according to DSM-IV criteria
• Body weight below 10th percentile
• First onset of AN and first admission
• Age: 11-18 years
• Female sex
• IQ > 85
• Distance from residence to hospital < 60 minutes by bus, train or car

(The Lancet 2014)
Procedure:

1. Inpatient somatic stabilization period of three weeks

2. Randomization

3. Standardized identical multimodal treatment program in both settings till target weight (15th -20th BMI percentile)

4. Day patient treatment for 5 days a week (with few exceptions)

5. Followed by an outpatient individual and group therapy till 52nd week after admission

Hypothesis: day patient treatment is not inferior to inpatient treatment
Treatment program

Department of Child and Adolescent Psychiatry, Psychosomatics and Psychotherapy, University Hospital of the RWTH Aachen
## Demographic and Clinical Characteristics at Admission (n=172, ITT)

<table>
<thead>
<tr>
<th>(mean ± sd)</th>
<th>AN Inpatient treatment N=85</th>
<th>AN Day patient treatment N=87</th>
<th>p =</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>15.2 ± 1.5</td>
<td>15.3 ± 1.5</td>
<td>0.599</td>
</tr>
<tr>
<td>Duration of illness (weeks)</td>
<td>53.7 ± 39.6</td>
<td>42.4 ± 33.1</td>
<td>0.044</td>
</tr>
<tr>
<td>BMI [kg/ m²]</td>
<td>15.1 ± 1.2</td>
<td>14.9 ± 1.5</td>
<td>0.439</td>
</tr>
<tr>
<td>BMI-percentile for age and sex</td>
<td>2.1 ± 4.9</td>
<td>1.7 ± 3.0</td>
<td>0.536</td>
</tr>
<tr>
<td>Binge/purging type* n (%)</td>
<td>14 (16.5)</td>
<td>17 (19.8)</td>
<td>0.692</td>
</tr>
</tbody>
</table>
Demographic and Clinical Characteristics at Discharge (n=172)

<table>
<thead>
<tr>
<th></th>
<th>AN Inpatient treatment N=85</th>
<th>AN Day patient treatment N=87</th>
<th>p =</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of treatment (days)</td>
<td>103 ± 41</td>
<td>116 ± 49</td>
<td>0.072</td>
</tr>
<tr>
<td>BMI [kg/ m²]</td>
<td>17.9 ± 1.1</td>
<td>18.1 ± 0.9</td>
<td>0.20</td>
</tr>
<tr>
<td>BMI -percentile for age and sex</td>
<td>17.5 ± 8.3</td>
<td>18.6 ± 8.5</td>
<td>0.40</td>
</tr>
</tbody>
</table>
Demographic and Clinical Characteristics at 52nd-week-follow up (primary end point)

<table>
<thead>
<tr>
<th></th>
<th>AN Inpatient treatment</th>
<th>AN Day patient treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>(mean ± sd)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI [kg/m²]</td>
<td>16.7 ± 17.0</td>
<td>18.6 ± 19.7</td>
</tr>
<tr>
<td>BMI-percentile for age and sex</td>
<td>17.8 ± 1.7</td>
<td>18.1 ± 2.0</td>
</tr>
</tbody>
</table>
Statistics: Comparison of BMI at 52nd week follow-up - Results

Intention-to-treat analysis

Test for Non-Inferiority
\[ p = 0.0001 \]

Day patient treatment is non-inferior to inpatient treatment

Test for Superiority
\[ p = 0.12 \]

Superiority could not be shown

(Herpertz-Dahlmann et al., The Lancet 2014)
## Average Outcome Score (Morgan & Hayward 1988) at 1-year follow-up

<table>
<thead>
<tr>
<th></th>
<th>IP</th>
<th>n=69</th>
<th>DP</th>
<th>n=71</th>
<th>CI</th>
<th>p=</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Morgan &amp; Russell Score (MRAOS)</td>
<td>7.3 (2.6)</td>
<td></td>
<td>8.4 (1.9)</td>
<td></td>
<td>0.64 (-0.05 to 1.34)</td>
<td>0.07</td>
</tr>
<tr>
<td>MRAOS Subscales</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>scale A (food intake)</td>
<td>6.6 (3.2)</td>
<td>7.7 (3.1)</td>
<td></td>
<td></td>
<td>1.02 (-0.03 to 2.08)</td>
<td>0.06</td>
</tr>
<tr>
<td>scale B (menstruation)</td>
<td>4.2 (4.9)</td>
<td>4.1 (5.0)</td>
<td></td>
<td></td>
<td>-0.52 (-2.19 to 1.16)</td>
<td>0.54</td>
</tr>
<tr>
<td>scale C (mental state)</td>
<td>8.0 (3.1)</td>
<td>10.1 (2.6)</td>
<td></td>
<td></td>
<td>1.05 (0.09 to 2.02)</td>
<td>0.03</td>
</tr>
<tr>
<td>scale D (psychosexual adjustment)</td>
<td>7.5 (3.5)</td>
<td>9.1 (2.7)</td>
<td></td>
<td></td>
<td>1.29 (0.34 to 2.24)</td>
<td>0.008</td>
</tr>
<tr>
<td>scale E (socio-economic state)</td>
<td>9.8 (2.1)</td>
<td>10.5 (1.5)</td>
<td></td>
<td></td>
<td>0.46 (-0.12 to 1.04)</td>
<td>0.12</td>
</tr>
<tr>
<td>Costs (€)</td>
<td>39,481 (16,174)</td>
<td>85</td>
<td>31,114 (16,246)</td>
<td>87</td>
<td>-8,367 (-13,247 to -3,487)</td>
<td>0.002</td>
</tr>
</tbody>
</table>

(Herpertz-Dahlmann et al., The Lancet 2014)
Comparison of inpatient treatment to stepped care day patient treatment at 52-weeks-follow-up

Conclusion I:

1) After one year, day patient treatment is not inferior to inpatient treatment

2) After one year, mental state (e.g. depression) in day patient treatment is significantly better than in IP.

3) After one year, psychosexual outcome in day patient treatment is significantly better than in IP.

4) Health care costs for day patient treatment were significantly lower (20%) than in inpatient treatment.
Clinical Characteristics at 2.5-year-follow up
n= 143 (83%)

<table>
<thead>
<tr>
<th>(mean ± sd)</th>
<th>AN IP N=68</th>
<th>AN DP N=75</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (y.)</td>
<td>17.6 ± 1.5</td>
<td>17.9 ± 1.5</td>
</tr>
<tr>
<td>BMI [kg/ m²]</td>
<td>18.8 ± 2.1</td>
<td>19.5 ± 2.8</td>
</tr>
<tr>
<td>BMI-percentile for age and sex</td>
<td>24.1 ± 21.9</td>
<td>29.7 ± 27.5</td>
</tr>
</tbody>
</table>
And the parents and patients?

▶ „It is wonderful being at home in the evening together with my family and friends…“

▶ „Eating at home is much more comfortable and relaxing…“

▶ „It was so good that our daughter was at home – although it was hard for us…“

▶ „It was good that our daughter could keep her personal contacts and friends…she was never lonely…“

▶ „(During DP) she got much more independent and self-conscious than ever before…“

▶ „DP was the best that could happen to her – it was like getting six numbers right in the lottery…“
Conclusion II

1) At 2.5 year follow-up day patient treatment after short inpatient treatment seems to be superior to inpatient treatment in weight maintenance and number of readmissions.

2) Day patient treatment may be a safe, less costly and more effective alternative to inpatient treatment.

3) Our results justify the broad implementation of (stepped care) day patient treatment.
Setting out to new shores...

Intensive, individualized home treatment with a multidisciplinary team including psychologists, medical doctors, nurses, nutritional and occupational therapists ... 24 h Hot line
Thank you for your attention!

…and thanks to all cooperators

K. Bühren, Aachen
A. Dempfle, Kiel
C. Fleischhaker, Freiburg
E. Pfeiffer, Berlin
R. Schwarte, Aachen
N. Timmesfeld, Marburg
A. Warnke, Würzburg
C. Wewetzer, Cologne