An Alternative Paradigm for the Psychosocial Management of Patients with DSD

David E. Sandberg PhD
Division of Child Behavioral Health
Department of Pediatrics & Communicable Diseases
Management of DSD

Changing Practices
“True Sex” versus “Optimal Gender”

**True Sex:** until mid-1950s medical management guided by belief that individual’s true sex revealed through examination of internal anatomy.

**Optimal Gender:** gender assignment considers multiple aspects of outcome, most prominently potential for complete sexual functioning.
Optimal Gender Policy

Designed to address shortcomings of gender assignment based on one criterion (eg, gonads, chromosomes)

Small window of gender flexibility (~18 months of age)

Perform “normalizing” genital surgery early in life:
  - To remove any parental doubt about the sex of the child
  - To promote stable gender identity
Nature Trumps Nurture?

2000
Nature Trumps Nurture?

..... but, perhaps not

Experiment of Nurture: Ablatio Penis at 2 Months, Sex Reassignment at 7 Months, and a Psychosexual Follow-up in Young Adulthood

Susan J. Bradley, Gillian D. Oliver, Avinoam B. Chernick and Kenneth J. Zucker

*Pediatrics* 1998;102:e9
DOI: 10.1542/peds.102.1.e9
Consensus Statement on Management of Intersex Disorders
Peter A. Lee, Christopher P. Houk, S. Faisal Ahmed, Ieuan A. Hughes and in collaboration with the participants in the International Consensus Conference on Intersex organized by the Lawson Wilkins Pediatric Endocrine Society and the European Society for Paediatric Endocrinology.

*Pediatrics* 2006;118:e488-e500
DOI: 10.1542/peds.2006-0738
### Example of a DSD Classification

<table>
<thead>
<tr>
<th>Sex Chromosome DSD</th>
<th>46,XY DSD</th>
<th>46,XX DSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. 45,X</td>
<td>Disorders of gonadal (testicular) development (e.g., complete gonadal dysgenesis (Swyer syndrome))</td>
<td>A. Disorders of gonadal (ovarian) development (e.g., ovotestic DSD; testic DSD (SRY+))</td>
</tr>
<tr>
<td>B. 47,XXY</td>
<td>Disorders in hormone synthesis or action (e.g., andro biosynth defect (17-HSD defic, 5α-reductase defic); defect in andro action (cAIS, pAIS))</td>
<td>B. Androgen excess (e.g., fetal (21-OH deficiency, 11-OH) deficiency)</td>
</tr>
<tr>
<td>C. 45,X/46,XY</td>
<td>Other (e.g., severe hypospadias, cloacal extrophy)</td>
<td>C. Other (e.g., cloacal extrophy, vaginal atresia)</td>
</tr>
<tr>
<td>D. 46,XX/46,XY</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
DSD: Moving in a New Direction

- Conference a consequence of advances in diagnosis, surgical techniques, and recognition that not all involved satisfied with the model of care
- Identifies outcomes beyond psychosexual development (gender identity, gender role, sexual orientation) as important
  - e.g., quality of social relationships, health-related quality of life
- Acknowledgement that social factors can modify outcomes
• Most common 46,XX DSD and most extensively studied from psychological outcomes standpoint
• Autosomal recessive mode of inheritance
• Psychological outcome studies predominantly of affected girls and women
  • opportunity to test hormonal theories of psychosexual differentiation in humans
  • however, not typically examined in context of broader developmental literature or research on pediatric chronic illness
## Systematic Review: Data

<table>
<thead>
<tr>
<th>Domain</th>
<th>Subdomain</th>
<th>% Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Psychosexual Differentiation</strong></td>
<td>gender identity, gender role, sexual orientation</td>
<td>68%</td>
</tr>
<tr>
<td>Psychological Adaptation</td>
<td>self-concept, behav/emot funct, psychopath, HRQoL</td>
<td>31%</td>
</tr>
<tr>
<td>Sexuality</td>
<td>sexual function/activity</td>
<td>25%</td>
</tr>
<tr>
<td>Social Adaptation</td>
<td>social funct. cohab/marriage</td>
<td>25%</td>
</tr>
<tr>
<td>Cognitive Function</td>
<td></td>
<td>23%</td>
</tr>
<tr>
<td>Reproduction</td>
<td>fertility status, conception</td>
<td>10%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>8%</td>
</tr>
<tr>
<td>Education/Occupation</td>
<td></td>
<td>7%</td>
</tr>
</tbody>
</table>

Psychosexual Differentiation

- Gender Identity
  - predominantly identified as girls and women with minority self-reassigning later in life

- Gender Role
  - girls/women exhibit more masculine/less feminine behaviors/interests

- Sexual Orientation
  - higher prevalence of non-heterosexual orientation
CAH: Psychological Endpoints

Dominant Conceptual Model

Androgen Exposure → Psychological Endpoint

73 of 98 studies (74%)
Mediation and Moderation

**Mediation**
- Predictor has both a direct and indirect relationship to an outcome
- Factor X represents mechanism by which effect occurs

**Moderation**
- Direct relationship between predictor and outcome
- Factor X determines under what circumstances effect occurs

- Androgens → Body Image
- Androgens → Sexuality
- 30% of studies

- CAH Severity → Gender (Re)Assignment
- Ethnicity
- 15% of studies

- Sexuality
- Mediation
- 30% of studies
Categorization of conceptual/theoretical models in CAH (and other DSD) suggests prenatal androgen exposure as primary predictor of psychological outcomes.

Relatively few studies designed to examine mediating or moderating influences of postnatal experiences on psychological outcomes.
Study of postnatal (e.g., surgical/social/intra-psychic) variables mediating and moderating the relationships between medical diagnosis and quality of life outcomes will inform:

- Development of theoretical models accounting for variability in psychosexual and other psychological outcomes
- Clinical strategies to modify the influences of DSD on quality of life outcomes.
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1R41HD057714