Adolescence & Chronic disease

“People spend their childhood learning to be like their parents, and their adolescence learning who they are and how they are different from their parents.”

Dr Miriam Kaufman, 2006
Why concentrate on this age group?

What is Adolescence

• “to grow up”
• Age 10 – 18 years

• From Child to Adult

• Period of profound changes in sexual, psychosocial, physical, cognitive development

• Complex process – interplay between individual, family, society, peers, health care professionals.
Physical Changes

Characteristics of Puberty

- **Adrenarche**: activation of the adrenal glands whose hormonal stimulation is partially responsible for onset of body odor, increase in sweat rate, increase in skin oil production, acne and (to some degree) facial hair growth in both genders
- **Pubarche**: the appearance of pubic hair
- **Thelarche**: the appearance of breast tissue
- **Menarche**: the first menstruation
- **Changes related to hormonal changes** – growth and sex hormones
Tanner Scale – Pubic hair (M/F)

- Tanner I  no pubic hair at all (prepubertal Dominic state) [typically age 10 and younger]
- Tanner II  small amount of long, downy hair with slight pigmentation at the base of the penis and scrotum (males) or on the labia majora (females) [10–11.5]
- Tanner III  hair becomes more coarse and curly, and begins to extend laterally [11.5–13]
- Tanner IV  adult-like hair quality, extending across pubis but sparing medial thighs [13–15]
- Tanner V  hair extends to medial surface of the thighs [15+]

Tanner scale – Male genitalia

- Tanner I  prepubertal (testicular volume less than 1.5 ml; small penis of 3 cm or less) [typically age 9 and younger]
- Tanner II  testicular volume between 1.6 and 6 ml; skin on scrotum thins, reddens and enlarges; penis length unchanged [9-11]
- Tanner III  testicular volume between 6 and 12 ml; scrotum enlarges further; penis begins to lengthen to about 6 cm [11-12.5]
- Tanner IV  testicular volume between 12 and 20 ml; scrotum enlarges further and darkens; penis increases in length to 10 cm and circumference [12.5-14]
- Tanner V  testicular volume greater than 20 ml; adult scrotum and penis of 15 cm in length [14+]
Tanner scale – Male genitalia

- **Tanner I** no glandular tissue: areola follows the skin contours of the chest (prepubertal) [typically age 10 and younger]
- **Tanner II** breast bud forms, with small area of surrounding glandular tissue; areola begins to widen [10-11.5]
- **Tanner III** breast begins to become more elevated, and extends beyond the borders of the areola, which continues to widen but remains in contour with surrounding breast [11.5-13]
- **Tanner IV** increased breast size and elevation; areola and papilla form a secondary mound projecting from the contour of the surrounding breast [13-15]
- **Tanner V** breast reaches final adult size; areola returns to contour of the surrounding breast, with a projecting central papilla [15+]

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Tanner scale – Female genitalia

- **Tanner I** no glandular tissue: areola follows the skin contours of the chest (prepubertal) [typically age 10 and younger]
- **Tanner II** breast bud forms, with small area of surrounding glandular tissue; areola begins to widen [10-11.5]
- **Tanner III** breast begins to become more elevated, and extends beyond the borders of the areola, which continues to widen but remains in contour with surrounding breast [11.5-13]
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**Tanner scale – Female genitalia**

![Tanner scale](image)

**Cognitive maturation – Piaget's stages**

Concrete operational thinking 7-11 years

Seriation—the ability to sort objects in an order according to size, shape, or any other characteristic. For example, if given different-shaded objects they may make a color gradient.

Transitivity - Transitivity, which refers to the ability to recognize relationships among various things in a serial order.

Classification—the ability to name and identify sets of objects according to appearance, size or other characteristics

Decentering—where the child takes into account multiple aspects of a problem to solve it.

Reversibility—the child understands that numbers or objects can be changed, then returned to their original state.

Conservation—understanding that quantity, length or number of items is unrelated to the arrangement or appearance of the object or items.

Elimination of Egocentrism
Formal operational thinking 11yrs – adulthood

- In this stage, individuals move beyond concrete experiences and begin to think abstractly, reason logically and draw conclusions from the information available, as well as apply all these processes to hypothetical situations.

- The abstract quality of the adolescent’s thought at the formal operational level is evident in the adolescent’s verbal problem solving ability.

- The logical quality of the adolescent’s thought is when children are more likely to solve problems in a trial-and-error fashion.

- They use hypothetical-deductive reasoning, which means that they develop hypotheses or best guesses, and systematically deduce, or conclude, which is the best path to follow in solving the problem.

- During this stage the adolescent is able to understand such things as love, “shades of gray”, logical proofs and values. During this stage the young person begins to entertain possibilities for the future and is fascinated with what they can be.

Examples

“If Kelly is taller than Ali and Ali is taller than Jo, who is tallest?”

If this can be performed without drawing then that implies abstract thinking – formal operational
Examples

*If you could have a third eye, where would you put it?*

- Concrete operational – “On my forehead” - 9 year old
- Formal operational – “On my hand so that I can around corners” – 12 year old
### Social & Emotional development

- **Independence**
- **Sexuality**
- **Body Image**
- **Peer Relationships**

### Stages of adolescence

<table>
<thead>
<tr>
<th>Early (10-14 yrs)</th>
<th></th>
<th>Middle (15-16 yrs)</th>
<th></th>
<th>Late (17-20 yrs)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximal Somatic / growth</td>
<td></td>
<td>Experimentation – Ideas, development of insight, reflection on personal feelings</td>
<td></td>
<td>Full ‘normal’ operational thinking</td>
<td></td>
</tr>
<tr>
<td>Thinking focused – / peer group</td>
<td></td>
<td>Cognitive / psychosocial maturation</td>
<td></td>
<td>Thinking focused – / peer group</td>
<td></td>
</tr>
<tr>
<td>“Normality”</td>
<td></td>
<td>Sexual stability</td>
<td></td>
<td>“Normality”</td>
<td></td>
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<tr>
<td>Exploratory sexual behaviour</td>
<td></td>
<td>Experimentation sexually</td>
<td></td>
<td>Exploratory sexual behaviour</td>
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<td></td>
<td></td>
<td>Risk taking behaviour</td>
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<tr>
<td></td>
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<td>Exploratory sexual behaviour</td>
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<td></td>
<td></td>
<td>Unwanted pregnancies, drug abuse</td>
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</table>
Developmental disorders

• Anxiety disorders
• Depression
• Conduct Disorder
• Suicidal behaviour
• Psychotic disorder
• Substance Abuse

Alcohol & substance abuse

• On the increase in South African teenagers
• Influenced by peer pressure
• Increase high risk sexual behaviour
• Substance itself may interfere with either the disease process, treatment, or both
• Clouds judgement, ethics
Teenage pregnancy

Chronic illness

- To the physical, emotional and social turmoil we add an additional factor – chronic illness

- Impact on physical condition might be mild eg in asthma, or pre-terminal eg Dilated Cardiomyopathy

- Added burden or responsibility to adhere to treatment including medication
Prevalence of chronic diseases in adolescence

• Between the age of 9-19 years approximately 15% of adolescents will have some type of chronic illness

• Diabetes, Asthma, Cystic Fibrosis, HIV, Obesity, Cerebral palsy, Cardiac, Renal disease, Cancers etc.

• As we improve survival from child hood through new medical knowledge so the incidence of chronic disease in this age group increases.

Increasing chronic illnesses

<table>
<thead>
<tr>
<th>Area</th>
<th>Type of survey</th>
<th>Age group</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iran (1986)</td>
<td>Infant hospital survey</td>
<td>17 - 19 years</td>
<td>2.7% (95% CI)</td>
</tr>
<tr>
<td>raised, Morocco (1992)</td>
<td>School based</td>
<td>17 - 19 years</td>
<td>3.4% (95% CI)</td>
</tr>
<tr>
<td>United States 1990-92</td>
<td>NPS</td>
<td>12 - 17 years</td>
<td>3.6% (95% CI)</td>
</tr>
<tr>
<td>State of Guangdong, China (1999-2000)</td>
<td>School based</td>
<td>10-15 years</td>
<td>3.5% (95% CI)</td>
</tr>
<tr>
<td>Mexico, Federal District (2004)</td>
<td>School based</td>
<td>10-15 years</td>
<td>12.9% (95% CI)</td>
</tr>
<tr>
<td>South Africa (2003)</td>
<td>School based</td>
<td>10-15 years</td>
<td>9.8% (95% CI)</td>
</tr>
<tr>
<td>Campos-Gonzalez, Brazil (1996)</td>
<td>School based</td>
<td>15 - 19 years</td>
<td>28.7% (95% CI)</td>
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<tr>
<td>Alexandria, Egypt (1996)</td>
<td>School based</td>
<td>15 - 19 years</td>
<td>18.4% (95% CI)</td>
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<tr>
<td>Melbourne, Australia (1994)</td>
<td>School based</td>
<td>15 years</td>
<td>22.0% (95% CI)</td>
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<tr>
<td>St. Louis, Missouri (1994)</td>
<td>School based</td>
<td>15 years</td>
<td>2.6% (95% CI)</td>
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<tr>
<td>L.A. County, USA (1996)</td>
<td>School based</td>
<td>15 years</td>
<td>7.6% (95% CI)</td>
</tr>
<tr>
<td>China, province of Shantou (1999-2000)</td>
<td>School based</td>
<td>15 years</td>
<td>18.9% (95% CI)</td>
</tr>
<tr>
<td>Cambodia, India (2009)</td>
<td>School based</td>
<td>12 - 15 years</td>
<td>2.8% (95% CI)</td>
</tr>
<tr>
<td>British Columbia, Canada (1995)</td>
<td>School based</td>
<td>12 - 15 years</td>
<td>18.2% (95% CI)</td>
</tr>
<tr>
<td>United Kingdom (1995)</td>
<td>National sample</td>
<td>16 - 17 years</td>
<td>11.5% (95% CI)</td>
</tr>
<tr>
<td>Peru, Geneva (1997)</td>
<td>School based</td>
<td>9 - 15 years</td>
<td>1.9% (95% CI)</td>
</tr>
<tr>
<td>Peru, Geneva (1999)</td>
<td>School based</td>
<td>9 - 15 years</td>
<td>4.4% (95% CI)</td>
</tr>
<tr>
<td>Peru, Geneva (2000)</td>
<td>School based</td>
<td>9 - 15 years</td>
<td>6.5% (95% CI)</td>
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</table>
What aspects to address when counselling?

1. Interference of the disease with pubertal processes
2. Degree of invalidity/incapacity
3. Visibility of the disease (including side-effects affecting self image)
4. Evolution (continuous, or sporadic)
5. Prognosis
6. Associated mental health problems
7. Everyday constraints (e.g. physical disability, complex treatment)
8. Beliefs and expectations
9. Defence mechanisms: denial, expectations, etc
Factors resulting in poor compliance

Factors related to the adolescent
- Cognitive factors
- Perception of the disease
- Emotional/psychological factors
- Patient education

Factors related to the teenager's environment
- Family functioning
- Peer influence

Factors related to the setting and communication
- Setting
- Relationship with the health-care team, communication style
- Complexity of the therapeutic regimen
- Interference of the treatment with the adolescent's needs and lifestyles

How to improve compliance

Factors related to the adolescent
- Provide information appropriate for the adolescent’s maturational stage
- Take into account underlying psychological factors
- Tailor the treatment to the patient’s individuation process and stage
- Communicate information in a straightforward way, trust the adolescent
- Tailor the doses of the medication to the patient’s physiological status (puberty/growth)
- Adapt the therapy to the adolescent’s lifestyle
- Ask for proposals from the patient

Factors related to the teenager’s environment
- If needed, suggest the support of siblings, peers

Factors related to the setting and communication
- Keep the same professionals in charge of individual patients over time
- Assess adherence regularly and in a non-threatening manner, check for side-effects
- Simplify the
**Needs to be addressed**

- Home (nature and quality of family environment)
- Education (school setting and problems, professional future)
- Activity (sports and leisure activities)
- Drugs (use and misuse of tobacco/alcohol/illegal drugs)
- Sexuality (sexual identity, expectation, behaviour)
- Security (risk-taking versus prevention of accidents)
- Suicide and self-harm (mood, anxiety, depression, suicidal conducts)

**Components of a good adolescent service**

1. Discuss the matter during childhood and as the young person grows up
2. Acknowledge issues facing both the patient and his/her parents
3. Identify colleagues who have an interest in (or responsibility for) young adults
4. Select a health worker (family practitioner, nurse, etc.) who can supervise the transition
5. Organize common meetings with the new care team
6. Plan ahead for some follow-up phone calls
7. Identify individuals, (adults, peers) who can give support to the patient during the transition
Requirements of youth friendly service

1. Availability and accessibility, safe and supportive environment

2. Youth-friendly procedures (time schedule, dealing with emergencies, waiting time, confidentiality, anonymity)

3. Youth-friendly staff, multi-disciplinarity

4. Counselling services

5. Adequate and comprehensive information

6. Youth participation

7. Community support

Summary

• Increasing need for adolescent specific services

• Such service need to be multidisciplinary including psychologists, socialworkers, dieticians etc.

• Need to invest extra time and effort to make progress

• Very rewarding – responsible, productive adult emerges from the cocoon of adolescence
Future

The End