

ABC of adolescence

Adolescent development

Deborah Christie, Russell Viner

This is the first in a series of 12 articles

In the care of adolescent patients, all aspects of clinical medicine are played out against a background of rapid physical, psychological, and social developmental changes. These changes produce specific disease patterns, unusual presentations of symptoms, and above all, unique communication and management challenges. This can make working with adolescents difficult. However, with the right skills, practising medicine with young people can be rewarding and fruitful. These skills are needed by everyone who works with young people in the course of their work.

As a young person enters adolescence, their parents are still largely responsible for all aspects of their health. By the end of adolescence, health issues will be almost entirely the responsibility of the young person. The challenge is to maintain an effective clinical relationship while the health responsibilities transfer from the parents to the young person.

Specialised clinical communication skills are needed to take an accurate history, bearing in mind new life domains not applicable to children (sex and drugs) and adding communication and engagement of the family to the standard adult consultation. Physical examinations of adolescents require consideration of privacy and personal integrity as well as requiring additional skills such as pubertal assessment. For effective treatment of illness in adolescence, doctors need to know about adolescent development if they are to manage adeptly issues of adherence (compliance), identity, consent and confidentiality, and relationships between young people and their families. Evidence from randomised controlled trials clearly shows that such skills can be developed and practised effectively in primary care.

Developmental tasks

During adolescence young people will negotiate puberty and the completion of growth, take on sexually dimorphic body shape, develop new cognitive skills (including abstract thinking capacities), develop a clearer sense of personal and sexual identity, and develop a degree of emotional, personal, and financial independence from their parents.

Adolescence is increasingly recognised as a life period that poses specific challenges for treating disease and promoting health



The primary challenges of adolescence

- The achievement of biological and sexual maturation
- The development of personal identity
- The development of intimate sexual relationships with an appropriate peer
- Establishment of independence and autonomy in the context of the sociocultural environment

Developmental tasks of adolescence

	Biological	Psychological	Social
Early adolescence	Early puberty (girls: breast bud and pubic hair development, start of growth spurt; boys: testicular enlargement, start of genital growth)	Concrete thinking but early moral concepts; progression of sexual identity development (sexual orientation); possible homosexual peer interest; reassessment of body image	Emotional separation from parents; start of strong peer identification; early exploratory behaviours (smoking, violence)
Mid-adolescence	Girls: mid-late puberty and end of growth spurt; menarche; development of female body shape with fat deposition Boys: mid-puberty, spermatarche and nocturnal emissions; voice breaks; start of growth spurt	Abstract thinking, but self still seen as "bullet proof"; growing verbal abilities; identification of law with morality; start of fervent ideology (religious, political)	Emotional separation from parents; strong peer identification; increased health risk (smoking, alcohol, etc); heterosexual peer interest; early vocational plans
Late adolescence	Boys: end of puberty; continued increase in muscle bulk and body hair	Complex abstract thinking; identification of difference between law and morality; increased impulse control; further development of personal identity; further development or rejection of religious and political ideology	Development of social autonomy; intimate relationships; development of vocational capability and financial independence

*Adapted from McIntosh N, Helms P, Smyth R, eds. *Forfar and Arneil's textbook of paediatrics*. 6th ed. Edinburgh: Churchill Livingstone, 2003:1757-68.

All clinical interactions with adolescents must be seen against this dynamic background of development. Issues around the management of chronic illness, for example, can be quite different with a 13 year old boy in very early puberty who has poorly developed abstract thinking compared with a 16 year old girl who is sexually mature, at final height, and has well developed adult cognitive skills.

Psychosocial development

The physical changes that signal the start of adolescence occur alongside psychological and social changes that mark this period as a critical stage in becoming an adult. Several models or theories have placed adolescence in a period of human development from birth to death. Most of these are “stage” models—with each stage completed before the individual moves on to the next.

Each model identifies a different set of “tasks” as defining adolescence. Freud focused on psychosexual development, seeing adolescence as a recapitulation of the development of sexual awareness in infancy. Piaget focused on cognitive development, seeing the development of abstract thinking abilities as making possible the transition to independent adult functioning. Most recently, Erikson identified the tensions around the development of personal identity as central to the notion of adolescence. A more useful model is the biopsychosocial approach, which acknowledges that adolescence has biological (puberty and sexual development) as well as psychological and social elements.

A criticism of many of the models describing the adolescent period is their failure to acknowledge explicitly that the young person is in a “system.” Their position in the system is determined by their relationships with different parts of the system and mediated by both external and internal demands (or tasks).

Internal physical and psychological changes interact with the external or social changes. The successful achievement and negotiation of the different tasks are therefore interdependent and rely on each other occurring at the appropriate time. When these challenges intersect with health or illness, they produce unique communication and management challenges, particularly around risk taking behaviours and adherence to medical advice or regimens.

Psychological changes

In early adolescence, young people gradually begin to develop abstract thinking—that is, the ability to use internal symbols or images to represent reality. In contrast to the more childish concrete thinking—where objects have to represent “things” or “ideas” for solving problems—abstract thinking enables us to think hypothetically about the future and assess multiple outcomes. You need to know whether the young person you are communicating with has a poorly or well developed capacity for abstract thinking, as this capacity is essential if he or she is to give informed consent to treatment and be able to manage chronic illness regimens independently.

It is important to recognise the interactions of psychological developments with puberty, particularly in the context of a developing sense of sexuality and body image. Body image and self esteem are vulnerable to differences in the timing of puberty among peers and to the physical effects of chronic illnesses.

Social changes

Adolescence is usually described as a period in which independence is achieved. It is more accurate, however, to talk about a change in the balance of independence and

Whereas puberty and cognitive development are largely biologically determined, the greater part of psychological and social development will depend on environmental and sociocultural influences. In non-Western cultures, the social and psychological domains may be markedly truncated

It may be hard to remember our childhood accurately, but few people forget their adolescence

The challenges for young people

- Challenging authority
- Taking risks
- Experimenting with drugs, alcohol, and sex
- Challenging the moral and social structure of society
- Demanding rights
- Taking responsibility for self and others
- Seeking spiritual paths (organised or cult religions)
- Getting a job
- Changing schools and educational environment
- Developing relationships
- Understanding sexuality
- Renegotiating rules at home

Concrete thinking	Abstract thinking
<p>You said I'd get ill if I missed my asthma inhalers. But I forgot them twice, and I stayed fine, so I don't need them any more</p>	<p>I missed my inhalers a couple of times, but I think I got away with it because I wasn't doing much exercise. I think I'll still need them in the future if I'm doing lots of exercise or in cold weather</p>

Examples of concrete and abstract thinking by young people in clinical interactions

Psychological effects of timing of puberty

	Early puberty	Late puberty
Biological	Taller than peers but may end up short	Short stature but later should achieve normal height; osteoporosis
Psychological	Psychological effects positive in boys (higher self esteem), negative in girls (low self esteem)	Low self esteem in boys; no major problems in girls
Social	Different from peers; treated as adolescent while still a child	Treated by adults and peers as less mature than real age; difficulty in separating from parents and in getting work

dependence with other parts of the young person's system (parents, peers, community, and even health professionals). The timing of these changes depends on the different social and cultural expectations of the environment in which the young person lives.

As adolescents start to redefine themselves in relation to others, they begin to move to a position where they define other people in relation to themselves. This way of thinking about oneself means that it can be hard to understand the impact of behaviour on others or to feel concern for how others might be affected by behaviour. Knowledge that has been "handed down" by adults is given little value. Adolescents may also strongly believe that no other person can have a clear understanding of how a young person feels.

Physical development

Psychological development occurs against a background of rapid physical change, including puberty, the pubertal growth spurt, and accompanying maturational changes in other organ systems. Both boys and girls pass through identifiable stages of development of secondary sex characteristics (Tanner stages).

The change from prepuberty to full reproductive capacity may take as little as 18 months or as long as five years. At age 13 years, boys can manifest the entire range. Although girls seem to enter puberty long before boys, the earliest sign in boys (increasing testicular volume), begins at a mean age of 12 years, only six months after girls development breast buds (the first sign of puberty).

Girls also seem considerably more developed earlier as the female growth spurt occurs early in puberty (mean age 11-12 years) compared with later in puberty in boys (mean age 14 years).

The defining event of puberty in girls is menarche. The mean age at menarche showed a substantial decline in most developed countries through the first half of the 20th century, stabilising in the 1960s in most countries at around 13 years for white girls and 12.5 years for black girls.

The commonest clinical concerns about puberty are delayed puberty and short stature, particularly in boys. The 97th centile for developing increased testicular volume (≥ 4 ml) is 14 years. Thus about 2% of boys will still be prepubertal (and therefore short) at 14-15 years.

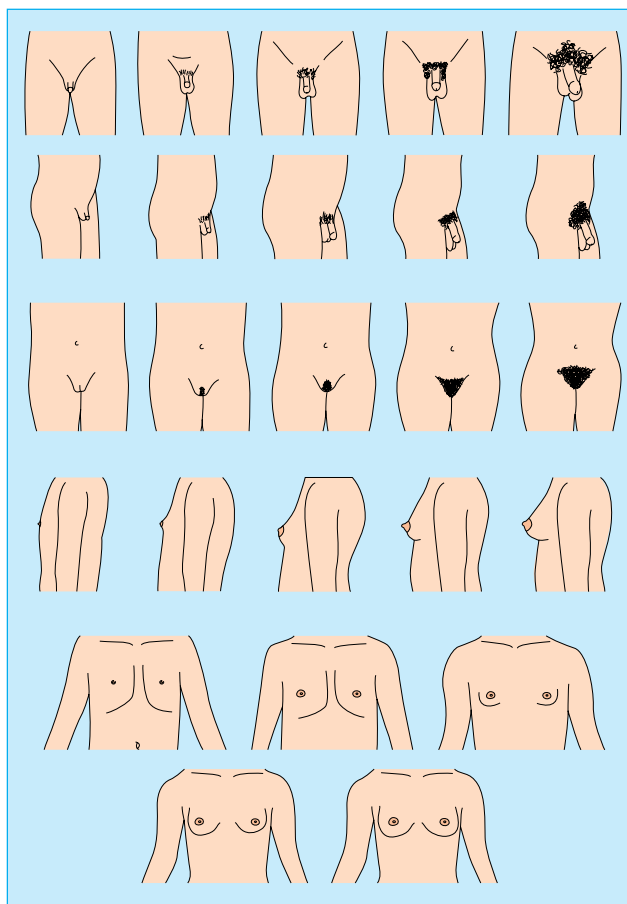
This can be quite distressing but is almost always a normal variant (constitutional delay of puberty and growth) that is often familial. By the time most boys present to their doctor, they will have early signs of testicular enlargement, which is easily assessed using an orchidometer.

Boys aged 15 or over with a testicular volume of 4 ml or more can be reassured that puberty is beginning. Those with no signs of puberty by age 15 should be referred to a paediatric endocrinologist for further investigation.



The Prader orchidometer is used for assessing testicular development: 1-3 ml for prepuberty; 4 ml for entering puberty; 8 ml and 10 ml for mid-puberty; and 15 ml to 25 ml for full puberty

As the ability to think in the abstract develops, it interacts with adolescents' sense of uniqueness to create an awareness of outcomes for others but a belief in personal invulnerability—being "bullet proof." This belief can lead young people to take substantial risks in terms of substance misuse, personal safety, or adherence to treatment, believing that negative outcomes will not apply to them



Stages of development of secondary sex characteristics in boys and girls

Causes of delayed and early puberty

Delay in puberty

- Constitutional delay of growth and puberty (boys)
- Poor nutrition
- Chronic illness
- Eating disorder
- Severe psychosocial stress
- Disorder of hypothalamic-pituitary-gonadal axis

Early puberty

- Familial
- Obesity (girls)
- Benign normal variants of pubertal timing: isolated thelarche (early breast development), premature adrenarche (early pubic hair development)
- Abnormalities of the central nervous system that disrupt the hypothalamic-pituitary-gonadal axis
- Gonadotrophin independent "precocious pseudopuberty"

Communicating with adolescents

Many adolescents and health professionals feel that communication between young people and medical professionals is often highly problematic. Working with young people is the only time in clinical practice when doctors do not deal directly with adults. Adult medicine consists of adult clinicians communicating with other adults, who share largely similar social values and norms about health, even taking account of cultural differences. In paediatrics, professionals negotiate treatment decisions with the parents, with children's participation obtained by explanation and parental authority.

In contrast, in consultations with adolescents, we are faced with the challenge of communicating with a personality undergoing rapid psychological and social changes who may not share an adult's understanding of society or adult cognitive abilities to decide between treatment alternatives in the light of future risks to health. The many versions of "youth culture" that coexist in our increasingly multicultural and ethnically diverse society reinforce this challenge.

Many doctors are not comfortable dealing with adolescents, and general practice studies show that teenagers receive shorter average consultation times from their family doctors than do children or adults. Fortunately, doctors can improve their clinical and communication skills with adolescents through training in adolescent development and in the health needs of adolescents.

Further reading and resources

- Neinstein LS. *Adolescent health care: a practical guide*. 4th ed. Baltimore: Williams and Wilkins, 2002.
- Strasburger VC, Brown RT. *Adolescent medicine: a practical guide*. 2nd ed. Philadelphia: Lippincott-Raven, 1998.
- *Bridging the gaps: healthcare for adolescents*. (Report of the joint working party on adolescent health of the royal medical and nursing colleges of the UK.) London: Royal College of Paediatrics and Child Health, 2003.
- www.euteach.com and www.adolescenthealth.org (for resources for teaching and training in adolescent health).

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Practical points for communicating and working with adolescents

- See young people by themselves as well as with their parents. Do not exclude parents completely, but make it clear that the adolescent is the centre of the consultation. Do this routinely as a way of respecting their healthcare rights
- Be empathic, respectful, and non-judgmental, particularly when discussing behaviours such as substance misuse that may result in harm to the adolescent
- Assure confidentiality in all clinical settings
- Be yourself. Don't try to be cool or hip—young people want you to be their doctor, not their friend
- Try to communicate and explain concepts in a manner appropriate to their development. For young adolescents, use only "here and now" concrete examples and avoid abstract concepts ("if... then") discussions
- If appropriate, take a full adolescent psychosocial history (the HEADSS protocol is helpful for this—see next box)

HEADSS protocol

- *H—Home life including relationship with parents
- E—Education or employment, including financial issues
- A—Activities including sports (also particularly note friendships and social relationships, especially close friendships)
- A—Affect (mood, particularly whether mood is responsive to situations)
- D—Drug use, including cigarettes and alcohol as well as drugs
- S—Sex (information on intimate relationships and sexual risk behaviours may be important in both acute and chronic illnesses in adolescents)
- S—Suicide, depression, and self harm
- S—Sleep

*Adapted from Goldenring et al. *Contemporary Pediatrics* 1998;Jul:75-80

The ABC of adolescence is edited by Russell Viner, consultant in adolescent medicine at University College London Hospitals NHS Foundation Trust and Great Ormond Street Hospital NHS Trust (rviner@ich.ucl.ac.uk). The series will be published as a book in summer 2005.

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Q&A

Stinging sensation after a bath

Question

If a distressing stinging body sensation after a bath is unresponsive to antihistamines, what might be the cause of the stinging sensation?

Akin T Akinlade, registrar, Department of Medicine, Lagos State University Teaching Hospital, Lagos, Nigeria

Answer

Sounds like it could be Uhthoff's phenomenon, a symptom characteristic of demyelinating disorders such as multiple sclerosis.

Andrew Clegg, medical senior house officer, Leeds

Answer

Could it be scabies?

W Havinga, general practitioner locum, Gloucestershire

http://bmj.bmjournals.com/cgi/qa-display/short/bmj_el;61056

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