Global Accelerated Action for the Health of Adolescents (AA-HA!): Implementation Guidance DRAFT

--- ANNEX 2 ONLY ---

World Health Organization, 13 December 2016

ANNEX 2. ADDITIONAL INFORMATION ABOUT ADOLESCENT HEALTH

Table of Contents [Annex 2]

A2.1. DIGITAL MEDIA OPPORTUNITIES AND CHALLENGES FOR ADOLESCENT HEALTH AND DEVELOPMENT

Adolescents today are engaged with digital media in many diverse ways. In most HICs, for example, it is not unusual for adolescents to have access to multiple digital and mobile platforms (e.g. laptops, digital music players, and mobile phones), and for them to spend many hours per day using them (Boyar et al. 2011; IPPR 2014). Adolescents in LMICs also are often exposed to digital media in a diverse forms. Some LMICs, for example, have developed extensive mobile phone systems in recent years, because these are far more affordable and accessible than pre-existing landline telephone systems. Globally, adolescent mobile phone usage is on the rise, whether used for texting, talking, taking photos, mobile social networks, surfing the internet, playing games, watching videos, or other purposes.

If adolescents have regular and reliable access to digital media, it can offer many benefits, including socialising with friends, finding like-minded peers, and accessing supportive and diverse information and networks in an empowering way, independent of parents and other adults (IPPR 2014). Social media can be an opportunity for adolescent education, self-expression, creativity, entertainment, and activism (UNICEF 2014 digital). A combination of digital, media, and social literacy are fundamental to an adolescent's capacity to use digital media competently and safely; such literacy provides adolescents with the technical and higher order evaluative skills required to access, understand, produce, and participate in digital media.

In addition to the opportunities for positive development provided by digital media and the online environment, several important risks exist, particularly as adolescence is a time of significant developmental change, when adolescents exhibit a limited capacity for self-regulation and an increased susceptibility to peer pressure and experimentation (ACOG 2016 social media). Traditional

"offline" problems such as bullying, relationship break-ups, and social pressures can be magnified and recorded online. Relationships may be more intensive, with more opportunities for contact and less visibility or moderation by adults, and relationships and friendships often create permanent digital content (IPPR 2014). Access to adult or extreme material is fundamentally different and much easier, and quality information, clear social norms, and opportunities for redress are less present in digital spaces than usually exists offline.

Research on the potentially harmful effects of digital media on adolescents has largely focused on negative impacts on mental health, particularly moderate to severe depressive symptoms, substance use, and suicide ideation and attempts (e.g. Hamm et al. 2015). The International Telecommunication Union (ITU), the UN specialized agency for information and communication technologies, has broadly outlined risks for children online relating to content, contact, conduct, commerce, excessive use, and societal inequity (ITU 2009). Specific risks and negative consequences for adolescents can result from sleep disruption, cyberbullying, gambling, contact with strangers, sexual messaging ("sexting"), pornography, and influence on alcohol use, self-esteem, and body image (Kuss et al. 2012; Scott et al. 2013; Bailin et al. 2014; Hamm et al. 2015; Lam et al. 2014; Moreno et al. 2014; Smith et al. 2014; WHO 2014i; Calado et al. 2016). For example, a review of studies of cyberbullying estimated that a significant proportion of children and adolescents (20%-40%) have been victims of cyberbullying, and accompanying psychopathology is common, including an increasingly well-established link to suicidality (Aboujaoude et al. 2015).

Studies in HICs and LMICs also have found that adolescent exposure to pornography is not unusual and sometimes has negative consequences. In a Swedish study, for example, frequent pornography use was associated with increased alcohol use and selling of sex; in an Ivory Coast study, it was associated with being sexually active, early onset of sexual intercourse, and multiple sexual partners; in a Sierra Leone study, it seemed to have become default, primary source of sex education; while in a Hong Kong study, family functioning and positive development characteristics were found to be protective factors in reducing pornography consumption (Day 2014; N Dri et al. 2015; Shek et al. 2016; Svedin et al. 2016).

Interventions to protect children online, build adolescent digital literacy, and positively influence adolescents' health in areas such as management of chronic conditions, obesity prevention and treatment, and sexual and reproductive health will be described in Section 3.

A2.2. LEADING GLOBAL RISK FACTORS FOR ADOLESCENT HEALTH OVERALL

Tables A2.1 and A2.2 provide estimated rankings of global risk factors for adolescent mortality and DALYs lost, based on the 2013 Global Burden of Disease Study (Mokdad et al. 2016).

This study found that water, hygiene, and sanitation-related concerns (i.e. unsafe water and sanitation, and inadequate handwashing) were among the top risk factors for disease burdens among 10-14 year old adolescents globally. Other environmental risk factors – i.e. household air pollution, low glomerular filtration, ambient particulate matter, and lead exposure – also were major risk factors for younger adolescents. In addition, iron-deficiency anaemia was the top risk factor for DALYs lost among young adolescents.

All of these issues were also estimated to be global risk factors for 15-19 year old adolescents in the 2013 Global Burden of Disease Study. However, the highest ranking risk factors in the older age group were risk behaviors (i.e. alcohol use, unsafe sex, and, to a lesser extent, drug use); these had relatively low rankings among younger adolescents. Other key risk factors estimated to be among

the top fifteen for older adolescents and not younger ones relate to occupational hazards, i.e. ergonomics, noise, and injury.

Two final important patterns seen in the 2013 Global Burden of Disease Study adolescent risk factor estimates relate to noncommunicable diseases and violence. Specifically, all adolescents were estimated to have risk factors related to poor diet and low physical activity (i.e. high fasting plasma glucose and high blood pressure); these had particularly high rankings among younger adolescent girls and boys. In addition, childhood sexual abuse was estimated to be a major risk factor for all adolescents, while intimate partner violence was a prominent risk factor for older adolescent girls and women.

Table A2.1. Leading risk factors associated with adolescent death, by sex and age group.

Rank	Global Risk Factors Associated with Adolescent Mortality					
	10-14 year olds			15-19 year olds		
	Male	Female	Total	Male	Female	Total
1	Unsafe water	Unsafe water	**Unsafe water**	Alcohol use	Unsafe sex	**Alcohol use**
2	Unsafe sanitation	Unsafe sanitation	**Unsafe sanitation**	Unsafe sex	Unsafe water	**Unsafe sex**
3	Inadequate handwashing	Inadequate handwashing	**Inadequate handwashing**	Unsafe water	Intimate partner violence	**Unsafe water**
4	Alcohol use	Household air pollution	**Household air pollution**	Unsafe sanitation	Alcohol use	**Unsafe sanitation**
5	Household air pollution	Low glomerular filtration	**Alcohol use**	Occupational injury	Unsafe sanitation	**Inadequate handwashing**
6	Low glomerular filtration	Iron deficiency	**Low glomerular filtration**	Inadequate handwashing	Inadequate handwashing	**Occupational injury**
7	Ambient particulate matter	Alcohol use	**Iron deficiency**	Drug use	Iron deficiency	**Intimate partner violence**
8	Iron deficiency	Ambient particulate matter	**Ambient particulate matter**	Low glomerular filtration	Drug use	**Drug use**
9	High fasting plasma glucose	High fasting plasma glucose	**High fasting plasma glucose**	Childhood sexual abuse	Childhood sexual abuse	**Low glomerular filtration**
10	Child sexual abuse	High blood pressure	**Child sexual abuse**	Household air pollution	Low glomerular filtration	**Childhood sexual abuse**
11	High blood pressure	Child sexual abuse	**High blood pressure**	High blood pressure	Occupational injury	**Iron deficiency**
12	Unsafe sex	Unsafe sex	**Unsafe sex**	Iron deficiency	Household air pollution	**Household air pollution**
13	n.a.	n.a.	**n.a.**	Ambient particulate matter	High fasting plasma glucose	**High fasting plasma glucose**
14	n.a.	n.a.	**n.a.**	High fasting plasma glucose	High blood pressure	**High blood pressure**
15	n.a.	n.a.	**n.a.**	Occupational particulates	Ambient particulate matter	**Ambient particulate matter**

Source: Mokdad et al. 2016.
n.a. = data not available

Table A2.2. Leading risk factors associated with adolescent DALYs lost, by sex and age group.

Rank	Global Risk Factors Associated with Adolescent DALYs Lost					
	10-14 year olds			15-19 year olds		
	Male	Female	Total	Male	Female	Total
1	Iron deficiency	Iron deficiency	**Iron deficiency**	Alcohol use	Iron deficiency	**Alcohol use**
2	Unsafe water	Unsafe water	**Unsafe water**	Unsafe sex	Unsafe sex	**Unsafe sex**
3	Unsafe sanitation	Unsafe sanitation	**Unsafe sanitation**	Unsafe water	Unsafe water	**Iron deficiency**
4	Inadequate handwashing	Inadequate handwashing	**Inadequate handwashing**	Drug use	Intimate partner violence	**Unsafe water**
5	Low glomerular filtration	Low glomerular filtration	**Low glomerular filtration**	Iron deficiency	Alcohol use	**Drug use**
6	Alcohol use	High fasting plasma glucose	**High fasting plasma glucose**	Unsafe sanitation	Unsafe sanitation	**Unsafe sanitation**
7	High fasting plasma glucose	Household air pollution	**Alcohol use**	Occupational injury	Drug use	**Inadequate handwashing**
8	Household air pollution	Childhood sexual abuse	**Household air pollution**	Low glomerular filtration	Inadequate handwashing	**Intimate partner violence**
9	Childhood sexual abuse	Alcohol use	**Childhood sexual abuse**	Inadequate handwashing	Childhood sexual abuse	**Low glomerular filtration**
10	Ambient particulate matter	Ambient particulate matter	**Ambient particulate matter**	Childhood sexual abuse	Low glomerular filtration	**Childhood sexual abuse**
11	Lead	High blood pressure	**Lead**	Occupational ergonomic	High fasting plasma glucose	**Occupational injury**
12	High blood pressure	Lead	**High blood pressure**	High fasting plasma glucose	Occupational ergonomic	**High fasting plasma glucose**
13	Unsafe sex	Unsafe sex	**Unsafe sex**	Occupational noise	Occupational injury	**Occupational ergonomic**
14	Drug use	Drug use	**Drug use**	High blood pressure	High blood pressure	**High blood pressure**
15	Vitamin A deficiency	Vitamin A deficiency	**Vitamin A deficiency**	Household air pollution	Household air pollution	**Household air pollution**

Source: Mokdad et al. 2016.

A2.3. RISK FACTORS FOR SPECIFIC ADOLESCENT DISEASE AND INJURY BURDENS

The following sections describe risk factors which are associated with the main causes of adolescent mortality and DALYs lost, as described in Section 2.2. Importantly, these are risk factor examples rather than exhaustive lists.

A2.3.1. UNINTENTIONAL INJURY

Risk factors associated with road injury can be grouped in four categories: those related to exposure to risk (e.g. inadequate separation of high-speed motorized traffic from vulnerable road users); crash involvement (e.g. inappropriate or excessive speed; presence of alcohol, medicinal or recreational drugs; use of a mobile phone); crash severity (e.g. non-use of seat-belts, child restraints, or crash helmets); and severity of post-crash injuries (e.g. those for which medical care is not needed or sought; those that result in a permanent disability) (WHO 2004b; WHO 2013a). For young car drivers, principal risks include being male, night-time driving, and transporting other young people as passengers.

Risk factors associated with drowning include lack of physical barriers restricting exposure to water bodies; poor swimming skills; low awareness of water dangers; high-risk behaviour (e.g. consuming alcohol while engaging with water); use of unsafe transport on water and water crossings; lack of a safe drinking water supply; and flood disasters (WHO 2008a; WHO 2014b).

Risk factors associated with burn injury differ according to region, but typically include alcohol and smoking; high set temperature in hot water heaters; sub-standard electrical wiring; fireworks (particularly adolescent boys); use of open fires to heat rooms and kerosene (paraffin) for lamps; and the use of open fires for cooking, especially when wearing long, loose-fitting clothing (particularly adolescent girls and women) (WHO 2008a; WHO 2008b).

A2.3.2. VIOLENCE

Risk factors associated with youth violence include those at the individual level (e.g. male sex; conduct disorder; low academic achievement; involvement in delinquency, illicit drug use, and harmful alcohol use); the family and peer level (e.g. poor parental supervision; family history of antisocial behaviour, bullying, and victimization; antisocial peers); and the community and society level (e.g. poverty; weak governance and poor rule of law; easy access to alcohol, illicit drugs, and firearms) (WHO 2015b).

Risk factors associated with intimate partner and sexual violence include those at the individual level for either the perpetrator (e.g. experience of childhood sexual abuse, antisocial personality) or the victim (e.g. young age, intra-parental violence) or both (e.g. low education, harmful use of alcohol, acceptance of violence), the community level (e.g. weak community sanctions, poverty), and the societal level (e.g. traditional gender norms and social norms supportive of violence) (WHO 2010b).

Risk factors associated with child maltreatment include the individual being an adolescent as opposed to a child aged 5-9 years, being unwanted, or having special needs. For the caregiver, they include having been maltreated themselves as a child; lacking awareness of child development, or having unrealistic expectations; misusing alcohol or drugs; and experiencing financial difficulties. For the relationship, they include physical, developmental, or mental health problems of a family member, and being isolated in the community. For the community, risk factors include inadequate policies and programmes to prevent child maltreatment, child pornography, child prostitution, and child labour, and social and cultural norms that promote or glorify violence towards others, support the use of corporal punishment, demand rigid gender roles, or diminish the status of the child in parent–child relationships (WHO 2014d; WHO et al. 2016).

Figure A2.1 provides an overview of how risk factors associated with violence against children relate to each other within a social ecological model.

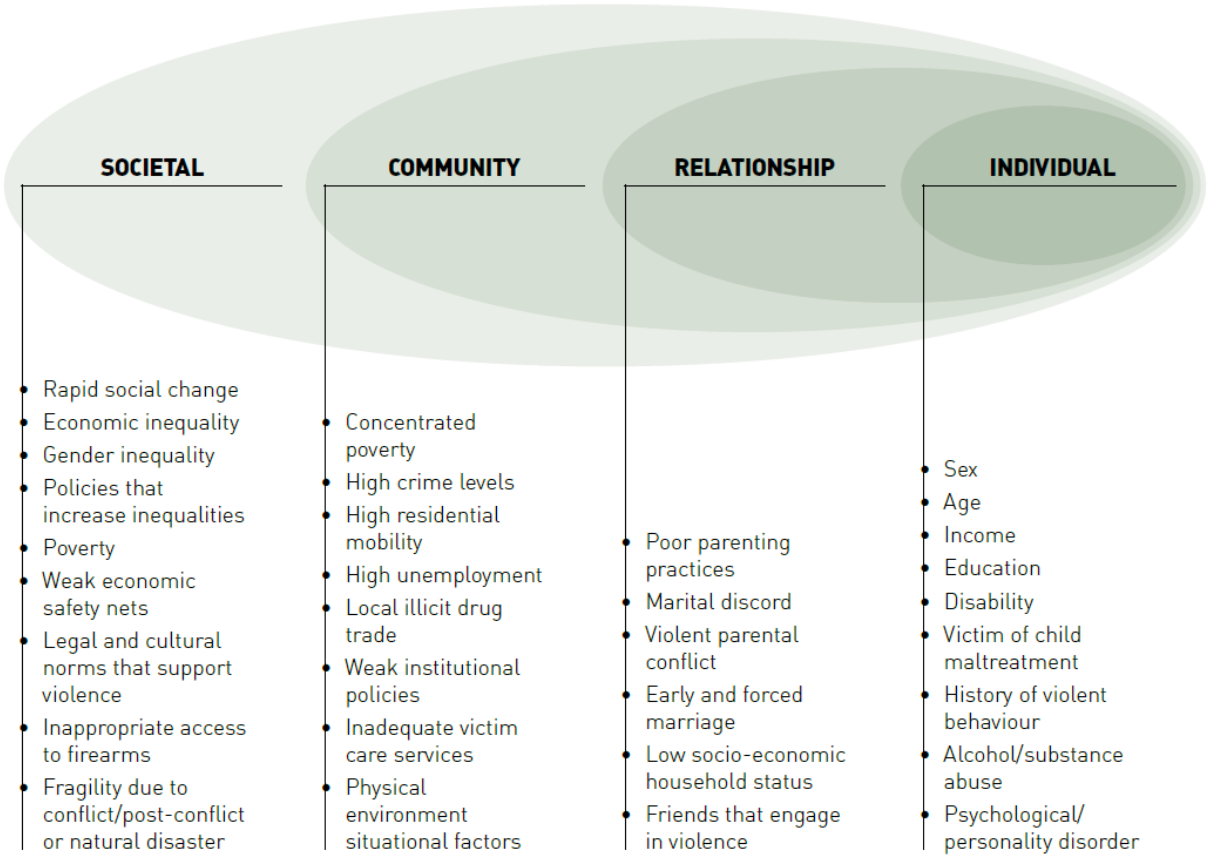

Figure A2.1. Social ecological model summarizing factors contributing to violence against children. Source: WHO et al. 2016.

A2.3.3. SEXUAL AND REPRODUCTIVE HEALTH, INCLUDING HIV

Risk factors associated with horizontal infection with HIV in adolescence include living in settings with a generalized HIV epidemic; sharing needles and syringes to inject drugs; having sexual intercourse without using a condom; having another sexually-transmitted infection; having a high number of sexual partners; being an older adolescent rather than a younger one; the boy or man being uncircumcised; and (females only) being divorced, separated, or widowed (WHO 2004a; WHO 2013b; WHO 2015c). HIV has also been associated with transactional sex, i.e. non-marital, noncommercial sexual relationships motivated by the implicit assumption that a girl or woman will exchange sex for status or material benefit received from a boy or man (Wamoyi et al. 2016). Key populations such as males who have sex with males, transgender persons, sex workers, or injecting drug users are also more vulnerable to HIV. Sex work by definition involves only adults, so the involvement of adolescents under 18 years in sex work is sexual exploitation. Any adolescents who are sexually abused and/or exploited are vulnerable to HIV, as are those in prisons and other closed settings (WHO 2013b).

Risk factors associated with becoming pregnant, or making someone pregnant, in adolescence include early marriage, sexual coercion, lack of access to and use of contraception, alcohol use, not already having a child, perceiving many barriers to condom use, having a sexual partner with lower education or negative attitudes about condoms, and (females only): early pubertal development; being an older adolescent rather than a younger one; younger age at first marriage; having low future aspirations; having a pregnant friend; and being employed (WHO 2004a; WHO 2011a).

Risk factors associated with maternal health problems among pregnant adolescents include low educational attainment, inadequate nutrition (e.g. anaemia, iodine deficiency), younger age, immaturity of the pelvic bones and birth canal, malaria, HIV/AIDS, and pregnancy-induced hypertension (WHO 2004b).

A2.3.4. COMMUNICABLE DISEASES

Risk factors associated with lower respiratory infections include outdoor air pollution, ambient particulate matter pollution, indoor air pollution from solid fuel use, second-hand smoke, alcohol use, and zinc deficiency (WHO 2006b; Lim et al. 2012).

Risk factors associated with diarrheal diseases and other infectious intestinal diseases include poor personal hygiene (e.g. in food-handlers); lack of sanitation (e.g. in food preparation and healthcare settings); eating undercooked food; contaminated soil, water, and food; poverty; and climate change (WHO 2006b; WHO 2008d; Health Protection Surveillance Centre 2012).

Risk factors associated with meningitis take place at the level of the organism (e.g. some strains are more virulent than others); individual (e.g. low socioeconomic status, tobacco smoke, HIV infection, mucosal lesions and concomitant respiratory infections); population (e.g. immunological susceptibility of the population), and environment (e.g. crowding, travel to epidemic areas, or special climatic conditions, such as the dry season or dust storms) (WHO 1998; WHO 2011b; WHO 2015f).

Risk factors associated with malaria can relate to younger age, female sex, occupation (e.g. migrant worker), location (e.g. near a large dam); ecology (e.g. deep forests), climate change, and weak health systems. For example, malaria may concentrate in marginalized populations, such as those living in remote border areas, and tribal populations (WHO 2006b; WHO 2012a).

Risk factors associated with tuberculosis include those related to transmission (e.g. poverty), and those related to developing tuberculosis after infection, e.g. age (adolescence); immunodeficiency (such as that caused by HIV infection, measles, or severe malnutrition); several noncommunicable diseases (such as diabetes mellitus and silicosis); smoking; and harmful alcohol and drug use (WHO 2013c; WHO 2014g).

A2.3.5. NONCOMMUNICABLE DISEASES

Risk factors associated with congenital anomalies can relate to genetics (e.g. consanguinity; ethnicity) and/or maternal factors (e.g. older age, infections, poor maternal nutrition, and environmental exposure) (WHO 2015i).

Risk factors associated with leukaemia include genetic susceptibility and environmental factors. The major environmental risk factor for leukemia is ionizing radiation, but weaker associations have also been found for nonionizing radiation, chemicals (e.g. hydrocarbons, pesticides), and alcohol, cigarette, and illicit drug use (Belson et al. 2007; Lim et al. 2012).

Risk factors associated with cerebrovascular disease include behaviours such as tobacco use, physical inactivity, having an unhealthy diet (rich in salt, fat, and calories), and harmful use of alcohol. Metabolic risk factors include raised blood pressure (hypertension), raised blood sugar (diabetes), raised blood lipids (e.g. cholesterol), and overweight and obesity. Other risk factors include ambient particulate matter pollution, household air pollution from solid fuels, lead exposure,

poverty, low educational status, advancing age, male sex, genetic disposition, and psychological factors (e.g. stress, depression) (WHO et al. 2011a; Lim et al. 2012; Agirbasli 2016).

Risk factors associated with lower back and neck pain include having a high body-mass index, a diet high in sugar-sweetened beverages, occupational low back pain, and ergonomic stressors (e.g. heavy lifting, vibration) (WHO 2004d; Lim et al. 2012).

Risk factors associated with chronic respiratory diseases, including asthma, include tobacco smoking, second hand tobacco smoke, other indoor air pollutants, outdoor air pollutants, allergens, and occupational agents (WHO 2007d; WHO 2013d).

Risk factors associated with iron-deficiency anaemia primarily relate to dietary inadequacies (e.g. diets based mostly on staple foods with little meat intake, past malnutrition, and low body nutrient stores). Risk factors also include early pregnancy and specific health conditions (e.g. infections that cause blood loss, such as hookworms, malaria, and urinary schistosomiasis) (WHO 2004d; WHO 2005b).

A2.3.6. MENTAL HEALTH, SUBSTANCE USE, AND SELF-HARM

Risk factors associated with suicide include those at the level of the individual (e.g. previous suicide attempt; mental disorders; harmful use of alcohol or drugs; job or financial loss; hopelessness; chronic pain; family history of suicide; genetic and biological factors); relationships (e.g. childhood sexual abuse; sense of isolation and lack of social support; relationship conflict, discord, or loss, intimate partner violence); the community (e.g. disaster, war, and conflict; stresses of acculturation and dislocation; discrimination; trauma or abuse); the society (e.g. access to means; stigma associated with help-seeking); and the health system (e.g. barriers to accessing health care) (Lim et al. 2012; WHO 2014h).

Risk factors associated with depression include those which are depression-specific (e.g. parental depression) and those that are more generic (e.g. intimate partner violence, inadequate parenting, child abuse and neglect, stressful life events, bullying) (WHO 2004e; Lim et al. 2012).

Risk factors associated with anxiety include an individual's experience of traumatizing events, learning processes during childhood (e.g. modelling and over-control by overanxious parents), feelings of lack of control, and low self-efficacy, coping strategies, and social support (WHO 2004e).

Risk factors associated with conduct disorder include maternal smoking during pregnancy, behavioural impulsivity, inept parenting, parental antisocial behaviour and substance use, child abuse, early aggressive behaviour and conduct problems, early substance use, deviant peer relationships, low popularity among peers and impoverished and socially disorganized neighbourhoods with high levels of crime (WHO 2004e).

Risk factors associated with adolescent alcohol use disorders include environmental factors (e.g. peer effects on risk-taking, peer acceptance as reward, low levels of parental supervision, exposure to a close family member who drinks, easy access to alcohol, positive expectations of alcohol); a family history of alcohol problems; and mental health (e.g. childhood sexual abuse, sensation seeking and behavioural disinhibition, conduct disorder, anti-social behaviour, and depression) (Lim et al. 2012; Marshall 2014).

Risk factors associated with drug use disorders include: early onset of drug use; using multiple types of illicit drugs; onset before age 15 years of externalizing (e.g. conduct disorder) and internalizing mental disorders (e.g. depression); high unemployment; and poverty (WHO 2010c).

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