



World Health Organization

**ADDRESSING ADVERSE CHILDHOOD
EXPERIENCES TO IMPROVE PUBLIC HEALTH:
EXPERT CONSULTATION, 4-5 MAY 2009**



MEETING REPORT

Background

In the decade since the first Adverse Childhood Experiences (ACE) Study results were published, a number of other initiatives in developed and developing countries, have begun examining the consequences of child maltreatment and other traumatic stressors for health risk behaviours and long-term chronic disease consequences. These include a comparative risk assessment of child sexual abuse to inform the global burden of disease (GBD) estimates; the Global Schools-based Student Health Survey (GSHS), the International Society for Prevention of Child Abuse and Neglect (ISPCAN) International Child Abuse Screening Tool (ICAST), and country-specific projects (e.g. in Australia, China, Malaysia, Singapore, South Africa, Swaziland, Vietnam).

These developments have occurred in a context of raised global awareness of the consequences of child maltreatment following the launch of reports such as the *World report on violence and health* and the *UN Study on Violence against Children*, in which the ACE Study and other findings about childhood adversity play a prominent role in highlighting the long-term consequences of child maltreatment. Most recently, both CDC's Violence Prevention Division and WHO's Department of Violence and Injury Prevention and Disability have prioritized child maltreatment prevention, and there is widespread interest at country level in conducting surveys to examine the prevalence and consequences of child maltreatment and commence the development of policies and programmes designed to prevent child maltreatment and mitigate its acute and long-term consequences.

However, while some high-income countries have awoken to the major public health implications attaching to ACEs by stepping up their primary prevention efforts, most of the world's children are in low- and middle-income countries, where, although the prevalence of childhood adversities is sometimes higher than in wealthy countries, governments have yet to act on the recognition that childhood adversities underlie serious, long-lasting consequences which:

- compromise individual health and development including the ability to learn in school;
- generate costly health problems such alcohol and drug abuse, mental illness, interpersonal violence, sexual assault, smoking, STDs, and transmission of HIV
- undermine community and neighbourhood support structures;
- create a climate in which crime can flourish;
- inhibit economic development, and
- erode safety and security.

Accordingly, and as part of wider violence and injury prevention, chronic disease prevention, and health promotion cooperative agreements between CDC and WHO, the two agencies agreed to strengthen their work on understanding and documenting ACEs and to jointly work towards establishing relationships with country counterparts to build a global network focused on:

- understanding the long-term health risk behaviour and chronic disease consequences of child maltreatment and traumatic stress;

- Promote future cross-country and cross-study comparisons of the risk behaviour, chronic disease consequences, and burden of child maltreatment, ultimately leading to a more robust evidence base from which to develop prevention programmes; and
- Create opportunities for CDC and WHO to provide technical assistance and programmatic advice to global partners in this focus area.

Meeting Agenda

To create a framework within which CDC, WHO and its partners can collaborate to achieve the above project objectives, the meeting agenda for the expert consultation addressed the following topics.

- A brief overview of the most prominent international initiatives aimed at documenting the relationships between childhood adversities, health risk behaviours and chronic disease consequences (e.g., ACE; GSHS; ISPCAN-ICAST; GBD);
- An opportunity for participants to showcase and share their plans and ongoing work in the study of child maltreatment and traumatic stress;
- Discussion of the potential benefit of developing a basic set of common methods and data collection processes, including the possibility of establishing core and optional questions that would allow for future cross-country and cross-study comparisons, and meta-analyses;
- Discussion of the need to integrate existing knowledge on child maltreatment and traumatic stressors and their long-term chronic disease consequences into a broader public health and social development framework and strategies for doing so;
- Discussion of the need for broad-based outcome measures and possible new areas (e.g., education, job performance; antisocial and criminal behaviour) for defining non-health outcomes of childhood adversity and traumatic stress.

Meeting Participants

Meeting participants included individuals working in the fields of public health and early child development from Canada, China, Former Yugoslav Republic of Macedonia, Philippines, Saudi Arabia, South Africa, Switzerland and Thailand. Apologies were received from Michael Dunne (Australia), and Laura Kann (US Centers for Disease Control and Prevention). Participants from WHO included technical staff from the departments of Violence and Injury Prevention and Disability; Chronic Disease Prevention and Health Promotion; Reproductive Health and Research; and Child and Adolescent Health. Annex 1 provides the full list of participants.

Adverse Childhood Experiences: Nature and Consequences

"In the brain, as in the economy, getting it right the first time is ultimately more effective and less costly than trying to fix it later". James Heckman; Nobel Laureate Economist. National Scientific Council on the Developing Child, Perspectives: The Cradle of Prosperity. (2006). <http://www.developingchild.net>

Presentations on the nature and consequences of ACEs highlighted their defining characteristics as being biological stressors that disrupt human neurological development and, in turn, interfere with normal cognition and behaviour. Individual ACEs have a cumulative effect which can be expressed as the sum of all ACEs an individual is exposed to, or "trauma dose".

ACE studies show that the higher the ACE score (and therefore the trauma dose), the more frequent and severe the consequences in respect of cognitive and behavioural disturbances (known as a "dose-response relationship"). Referring to findings from the original ACE study of approximately 17,000 middle-class Californians, it was shown that ACEs are highly prevalent (e.g. 28% of respondents had experienced physical abuse, 21% sexual abuse, and 13% had witnessed their mother being beaten), and have a strong influence on adolescent health; reproductive health; smoking; alcohol abuse; illicit drug abuse; sexual behaviour; mental health; the risk of violence and re-victimization; stability of relationships, homelessness; and performance in the workforce. Via these behaviours and other neuro-biological pathways, ACEs increase the risk of: heart disease; chronic lung disease; liver disease; suicide; injuries, HIV and STDs, and other risks for the leading causes of death.

While compelling, findings from the original ACE study are specific to middle-class US citizens, begging the question as to whether the same dose-response relationships exist in other settings. The GSHS includes a module that has questions on a number of adversities experienced in the past year, which to date has been included in nearly 50 country surveys. Findings for a pooled sample of 22,256 respondents from five African countries demonstrate significant dose-response relationships between adversities such as forced sex and bullying, and risk behaviours such as smoking, alcohol abuse, unsafe sex, and attempted suicide¹. Findings from community-based surveys in mainland China, Hong Kong SAR, Taiwan, Singapore and Malaysia also show that adolescents in these cultures experience a substantial health burden from exposure to various adversities². Although not designed to replicate the original ACE survey's exploration of adversity in infancy and early childhood, these other findings strongly suggest the universality of ACE effects and consequences.

¹ Brown DW et al. Exposure to physical and sexual violence and adverse health behaviours in African children: results from the Global School-based Student Health Survey. *Bull World Health Organ* 2009;87: 447-455.

² Dunne MP et al. (2008). The evolving evidence base for child protection in Chinese societies. *Asia-Pacific Journal of Public Health*, 20(4), 267-276.

Viewed through a public health lens, ACEs are widely prevalent; highly interrelated; and intergenerational. They have a cumulative stressor (dose-response) effect; their effects are biologically plausible; they affect multiple domains of health and social function, and they are associated with comorbidity (trauma spectrum disorder). As such, many conditions that public health seeks to prevent as if they were the primary problems - such as smoking, alcohol and substance misuse, depression, STDs, and so on - are seen to be the diverse outcomes, or symptoms, of a common set of underlying determinants. Consequently, ACEs themselves are the primary problem, and for a truly preventive, upstream approach, public health and social development policies and programmes need to be explicitly aimed at ACE reduction.

Methodological Issues

The original ACE study, and other population-based surveys (e.g. GSHS, the WHO Multi-country Study on Violence Against Women) exploring relationships between various exposures, risk behaviours and health conditions use cross-sectional retrospective study designs. Within the ACE study itself, the reporting of adversities is retrospective; ascertainment of health and social problems was cross-sectional at baseline, and the study has a prospective component involving the ascertainment of outcomes such as disease, health care utilization, pharmacy utilization, and mortality.

While criticized on the grounds that they are of limited value in establishing causal relationships, and that recall bias may lead to the under- or over-inclusion of events, retrospective cross-sectional designs do provide a well-tested and widely-used approach to examining the experience of populations over time to estimate the association between exposure and outcome. The alternative is to use a prospective longitudinal study design, which registers exposures as they occur and uses objective risk and outcome measures. However, prospective longitudinal designs have their own weaknesses. For instance, the ethical imperative of intervening where currently occurring child maltreatment is disclosed during a prospective longitudinal study means that such studies cannot examine the effects of unmitigated exposure; they are costly and complex to mount, and may be unfeasible in low- and middle-income countries with high residential mobility.

The ideal methodology for measuring ACEs and their effects has yet to be designed. Retrospective cross-sectional and prospective longitudinal studies both have strengths and weaknesses - both have been applied in different settings, and both provide evidence that childhood adversity is an important health and social problem. The validity of various methods for assessing and studying maltreatment and other adversities is a source of ongoing debate, and efforts to advance the field should draw upon the strengths of prospective and retrospective studies.¹

¹ Gilbert R. et al. (2008). Burden and consequences of child maltreatment in high-income countries. *Lancet*, S0140-6736 (08) 61706-7.

Measuring ACEs: International Initiatives

Over and above the original ACE study, efforts by meeting participants to measure the relationships between adverse experiences and health outcomes included three broad categories of study. First, the group of GSHS surveys among students aged 13-15 years. Second, surveys informed by ISPCAN's ICAST. Third, efforts to apply the original ACE questionnaires in population-based surveys of adults.

As noted above, GSHS surveys that include a module on exposure to violence have been applied in numerous countries, and permit the examination of relationships between the amount and severity of such violence and various risk behaviours and health conditions.

Surveys using the ICAST tools have focused on older adolescents and young adults, and have been conducted largely in Asian societies.

Efforts to apply the original ACE questionnaires in population-based surveys have interviewed young and middle-aged adults, with examples of such studies in China, Iceland, and the Philippines.

Upcoming work to measure ACEs is taking place in the Former Yugoslav Republic of Macedonia, where a survey of young adults is being planned, and in South Africa, where the Human Sciences Research Council is exploring the possibility of including items on ACE exposures in a national youth risk behaviour survey.

Ethical Issues

The original ACE questions asked people aged 18 years and over if they had experienced specific types of adversity in the first 17 years of life. This avoids the possibility of identifying ongoing child maltreatment, and, in countries with mandatory reporting laws, obviates the legal requirement that investigators report current cases and refer them to appropriate treatment. However, because ACEs experienced in early childhood are of such importance in shaping subsequent risk, the ideal is to ascertain ACE exposure as early as possible during childhood. Doing so, however, obliges researchers to report and/or ensure access to treatment and child protection services for individuals that disclose ongoing maltreatment. By way of illustration, in Finkelhor's 2002-2003 telephone-based survey of maltreatment in US children aged 2-17 years, "children or parents who disclosed a situation of serious threat or ongoing victimization were recontacted by a clinical member of the research team trained in telephone crisis counseling, whose responsibility was to stay in contact with the respondent until the situation was resolved or brought to the attention of appropriate authorities"¹. Since in most low- and middle-income country settings such telephone counselling and child protection services are either unavailable or inadequate, this ethical requirement means that in such settings ACE questions cannot be asked of people in their first 17 years of life.

¹ Finkelhor D et al. (2005). The victimization of children and youth: a comprehensive, national survey. *Child Maltreatment*, 10 (1), 5-25.

It was, however, observed that where ACEs are ascertained as part of a public health surveillance exercise where respondent anonymity is guaranteed, the mandatory reporting requirement does not apply, and therefore ACE questions can be included. The GSHS survey was presented as an example, since it includes questions completed by 13-15 year-olds about some behaviours that under the age of 18 year are illegal (e.g. smoking, alcohol and illicit drug use), and questions about recent exposure to forced sex and physical violence. GSHS guarantees respondent anonymity, and to date countries have not objected on ethical grounds to the inclusion of such questions. Emergency department systems for the registration and surveillance of physical injuries due to violence were presented as a second example, since, beyond the provision of care for the injury condition, ethical requirements generally do not require that emergency department staff also ensure the referral of child victims of violence to appropriate child protection services.

During the early design stages of the original ACE study, ethical objections were also raised on the grounds that asking adults about adversities in childhood would be emotionally upsetting. However, the conduct of the study revealed that far from being upset, adult respondents appreciated the opportunity to talk about the adversities discussed, and the study has now accumulated substantial evidence as to the acceptability of the questions among adults.¹

Standardizing ACE Assessment Questions

To explore the generalizability of the original ACE findings from the US to other settings requires that different surveys employ a core set of standardized ACE questions, while also being flexible enough to be adapted to the cultural specificities and demand characteristics of each setting.

As a starting point for this standardization discussion, an 11-question module derived from the original ACE questionnaires for inclusion in the US Behavioral Risk Factor Surveillance System (BRFSS) was presented (see Annex 2). Participants indicated that while all the adversities tapped by the BRFSS module would be relevant in their own settings, there were additional types of adversity not covered by the module, and that not all questions were phrased in ways that would be correctly understood in their own countries.

Discussion then focused on reviewing the applicability of the ACE categories included in the BRFSS and original ACE questionnaires to participants' countries, with a view to deciding if additional categories should be added. Potential new ACE categories were evaluated according to the following criteria:

- Biologically relevant (i.e. produce a biological stress reaction)
- Policy sensitive

¹ For instance, see: Edwards VJ, et al. (2007). It's OK to ask about past abuse. *Am Psychol.* 2007 May-Jun; 62(4): 327-8; discussion 330-2

- Prevalence in all societies neither too high nor too low
- Measureable quickly and easily
- Proximal in respect to causality

Annex 3 lists the ACE categories arrived at through this process, including proposed new categories that following discussion were dropped because they did not meet the above criteria.

Discussion then focused on establishing a process for developing a standardized set of ACE questions, relevant to diverse cultural, social and economic settings and including adult and adolescent versions. A seven-stage process was suggested, using as initial input the revised list of ACE categories agreed by the meeting participants and included as Annex 3 of this report.

1. All: Convene focus group discussions with colleagues to critically reflect upon the revised ACE categories and their applicability in your setting, feed comments back to CDC-WHO.
2. CDC-WHO: Draft expanded list of ACE categories and identify items from existing ACE adult questionnaires and other questionnaires that tap the revised ACE categories.
3. All: Convene focus group discussions with small samples of the general population to cognitively test (i.e. assess intelligibility, acceptability, etc) the questions by asking participants what the questions mean to them. In so doing, ask for additional questions or alternative phrasings of questions that could be asked of adolescents.
4. CDC-WHO: Using the collated information from steps 1 and 2, prepare a core ACE questionnaire with questions for adults and adolescents.
5. All: Translate and back translate the core questionnaire as required.
6. All: Field-test the draft core questionnaire in multiple different countries.
7. CDC-WHO: based upon field-testing results, prepare a first edition of the international ACE questionnaire.

For the purposes of initial standardization, it was agreed that the focus would be limited to the ACE questions. However, because single-issue surveys are resource-intensive they are unpopular, and therefore ultimately the ACE questions will probably be administered as a module within a broader survey (e.g. GSHS, BRFSS).

Ownership and publication of a standardized ACE questionnaire developed through this process would reside with CDC and WHO as lead partners in the endeavour, with the possibility of additional partners depending upon the extent to which other agencies provide support for and input to the process.

Enhancing Policy-maker Uptake

Despite some local successes in mobilizing policy-makers to more systemically measure ACEs, ACE findings have yet to stimulate the "paradigm shift" implied by the preventive focus that ACE investigations suggest should be placed upon early-life biological

stressors and their neuro-developmental impacts as the common origin of many problems in later life¹. One reason for this limited uptake may be the decades-long delay between ACE exposure and subsequent problem manifestation, since this delay means ACE-reduction interventions delivered within the usual 4-5 year framework of an elected government would yield few benefits to that government, and therefore are politically unattractive and ignored in favour of interventions promising visible returns in 2-3 years.

It was suggested that strategies to increase uptake should not be premised on the assumption that governments can do something to reduce ACE exposures now. Instead, ACE work should be framed as an emerging field that highlights many massive prevention opportunities and raises questions about how ACE exposure can be reduced: the current challenge is not to fix the ACE problem, but to find out how to fix it.

Other suggested strategies to increase ACE uptake include efforts to ensure that ACE findings are shared with and integrated into other key agendas and sectors, including:

- Commission on the Social Determinants of Health
- Early child development
- Adolescent health
- Mental health
- HIV/AIDs
- Chronic disease prevention
- Labour and employment
- Criminal justice

To raise ACE awareness and bring these different sectors on board, a clear presentation that simply conveys the essence of the ACE concept, consequences and implications should be developed. Once this is available, participants would take every opportunity to deliver the presentation to their colleagues, peers and other potential interest groups.

The possibility was raised of drafting a *Lancet* opinion article that describes the CDC-WHO initiative to globalize ACE measurement efforts and links ACE work to recent and forthcoming *Lancet* special issues on child maltreatment, adolescent health and mental health.

Development of an inventory that lists the usage of ACE study findings, both in published and grey articles and policy papers, was also suggested as a potentially useful advocacy strategy. To this end, the University at Albany, The State University of New York, is developing an ACE clearing house aimed at serving this purpose.

¹ Shonkoff JP et al. Neuroscience, molecular biology, and the childhood roots of health disparities: building a new framework for health promotion and disease prevention. *JAMA*, 301(21), 2252-2259.

The University of Albany is working with Prevent Child Abuse America's national office to develop a website and conference that will link policymakers, program directors, practitioners, and researchers involved in the implementation and evaluation of ACE response strategies around the world. Heather Larkin, MSW, Ph.D. Assistant Professor, School of Social Welfare University at Albany, The State University of New York, Richardson 209 135 Western Ave. Albany, NY 12222. +1-(518)-591-8779; hlarkin@uamail.albany.edu

Other suggestions for increasing ACE uptake included planning for a World Health Assembly resolution on ACEs in 5-10 years time when there are enough findings from low-middle- and high-income countries beyond the US to demonstrate the universality of ACEs and their impact on risk behaviours and health outcomes.

ACE Network and Next Meeting

Participants indicated their interest in being part of an ACE network aimed at advancing global understanding and measurement of ACEs, through the exchange of information and the provision of technical expertise and support.

It was emphasized that currently neither CDC nor WHO have the resources to establish a formal secretariat to coordinate such a network, and therefore that over the next 6 to 12 months networking activities would be built around a group emailing list and focused upon developing and pilot testing the standardized core questionnaire.

Activities in this period would also include exploring who might fund or provide in-kind support for a more substantial ACE network secretariat.

It was agreed that the network should be opened up to all interested partners.

A subsequent meeting of the ACE expert group is envisaged, but will depend upon resource availability. Such a meeting should take place once cognitive testing of the standardized ACE questionnaire is complete, and the draft version ready for piloting.

Every opportunity should also be made for whole or part of the ACE network to meet during already-scheduled conferences and meetings on other topics, such as the 2010 World Conference on Injury Prevention and Safety Promotion (London, UK, 21-24 September 2010: <http://www.safety2010.org.uk/>); Commission on Social Determinants of Health follow-up meetings, and GSHS meetings and training events.

Next Steps

1. David Brown will establish a group Emailing list and ensure that Email contact is established with all meeting participants.
2. Alex Butchart will draft a meeting report that will be circulated for comment among all meetings participants by 18 May 2009, with a request for comments and suggested amendments by 22 May 2009, after which the report will be finalized.
3. Rob Anda and David Brown to draft the outline of a possible *Lancet* article.
4. Leanne Riley, Rob Anda, David Brown and Alex Butchart will prepare a document setting out the revised ACE categories and suggesting a set of questions and topics that can be used to structure small group discussions of the categories. This group will also look at existing ACE PowerPoint presentations and adapt one for use in global settings, which will then be shared with all participants.
5. All participants were requested to share information about contacts they have in official development assistance agencies who may be interested in hosting an ACE seminar or informal discussion. Please forward this information to David Brown.

ANNEX 1: LIST OF PARTICIPANTS

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ANNEX 2: 2009 BRFSS ACE MODULE

1. Did you live with anyone who was depressed, mentally ill or suicidal?
 1. *Yes*
 2. *No*
 3. *Don't Know / Not sure*
 9. *Refused*

2. Did you live with anyone who was a problem drinker or alcoholic?
 1. *Yes*
 2. *No*
 3. *Don't Know / Not sure*
 9. *Refused*

3. Did you live with anyone who used illegal street drugs or who abused prescription medications?
 1. *Yes*
 2. *No*
 3. *Don't Know / Not sure*
 9. *Refused*

4. Did you live with anyone who served time or was sentenced to serve time in a prison, jail, or other correctional facility?
 1. *Yes*
 2. *No*
 3. *Don't Know / Not sure*
 9. *Refused*

5. Were your parents separated or divorced?
 1. *Yes*
 1. *No*
 8. *Parents not married*
 7. *Don't Know / Not sure*
 9. *Refused*

6. How often did your parents or adults in your home ever slap, hit, kick, punch or beat each other up?
 1. *Never*
 2. *Once*
 3. *More than once*
 7. *Don't know / Not sure*
 9. *Refused*

7. Before age 18, how often did a parent or adult in your home ever hit, beat, kick, or physically hurt you in any way? Do not include spanking. Would you say---
 1. *Never*

2. *Once*
3. *More than once*
7. *Don't know / Not sure*
9. *Refused*

8. How often did a parent or adult in your home ever swear at you, insult you, or put you down?

1. *Never*
2. *Once*
3. *More than once*
7. *Don't know / Not sure*
9. *Refused*

9. How often did anyone at least 5 years older than you or an adult, ever touch you sexually?

1. *Never*
2. *Once*
3. *More than once*
7. *Don't know / Not sure*
9. *Refused*

10. How often did anyone at least 5 years older than you or an adult, try to make you touch them sexually?

1. *Never*
2. *Once*
3. *More than once*
7. *Don't know / Not sure*
9. *Refused*

11. How often did anyone at least 5 years older than you or an adult, force you to have sex?

1. *Never*
2. *Once*
3. *More than once*
7. *Don't know / Not sure*
9. *Refused*

ANNEX 3: EXPANDED ACE CATEGORIES

Bold items are from the original ACE questionnaire. Regular font items are proposed new ACE categories. *Italicized items were dropped after discussion.*

Abuse

- **Emotional**
- **Physical**
- **Sexual**
- Discrimination
- Forced marriage

Community dysfunction

- Witnessing severe physical violence
- Discrimination
- Collective violence
- War zone resident
- Torture (witness to)

Sexual exploitation

Peer violence

- Bullying/sibling/sexual

Homelessness

Teen Pregnancy

Natural / man-made disasters

Child illness/injury

Child labour

Financial distress

- *Extreme poverty / unemployment*

Social isolation

Famine

School truancy / expulsion / suspension

Forced marriage

Neglect

- **Emotional**/social isolation
- **Physical** - Nutritional
- Child labour/child trafficking
- Begging

Household dysfunction

- **Substance abuse**
- **Mental illness**
- Mother/Father/Sibling/
household member treated
violently
- **Incarcerated household
member**
- **Parental separation**/loss or
death of parent
- As a child were you involved in
caring for a critically (chronic) ill
parent
- **Parental discord**
- **Residential mobility/instability**