ACEs
(Adverse Childhood Experiences)

Lifetime Impacts of Adverse Childhood Experiences

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Early Life Experience and The Brain

Childhood
• First 2 years - baby’s brain grows from 25% to 80% of adult size
• Critical restructuring continues through childhood for empathy, trust, community

Chronic Stress from ACEs
• Violence - over-develop 'life-preserving' brain
  NEUTRAL CUES LOOK THREATENING
• School - anxious, disengaged, poor learner

Tau et al, 2010; Mercy, Butchart, Bellis et al, 2014
Bio-molecular Developments

• Brain Development and Neglect

• Physical and Sexual Abuse
  • C-reactive protein (liver)
    • Deals with pathogens and damaged cells
    • Linked with e.g. coronary risk, diabetes II
  • Interleukin 6 (immune system)
    • Response to tissue damage
    • Diabetes II, Cardio vascular disease

• Telomere length
  • Length is a marker of cell ageing
  • Physical Abuse, Parental alcohol and drug use
### How many people suffered ACEs 0-18 years old?

**European Survey of students 18-25 years old (n=10,696)**

<table>
<thead>
<tr>
<th>ACE are</th>
<th>Wales</th>
<th>England</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical abuse</td>
<td>16%</td>
<td>15%</td>
<td>6%</td>
</tr>
<tr>
<td>Sexual abuse</td>
<td>7%</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>Domestic violence</td>
<td>17%</td>
<td>13%</td>
<td>8%</td>
</tr>
<tr>
<td>Parental separation</td>
<td>25%</td>
<td>24%</td>
<td>16%</td>
</tr>
</tbody>
</table>

**East Europe** 53% suffered at least one ACE, 7% 4+ ACEs

**England** 48% suffered at least one ACE, 9% 4+ ACEs

**Wales** 50% suffered at least one ACE, 14% 4+ ACEs

<table>
<thead>
<tr>
<th>Factor</th>
<th>Wales</th>
<th>England</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depressed/suicidal</td>
<td>18%</td>
<td>12</td>
<td>10%</td>
</tr>
<tr>
<td>Alcohol problem</td>
<td>13%</td>
<td>10%</td>
<td>9%</td>
</tr>
<tr>
<td>Incarcerated</td>
<td>4%</td>
<td>4%</td>
<td>6%</td>
</tr>
<tr>
<td>Street drug</td>
<td>6%</td>
<td>4%</td>
<td>8%</td>
</tr>
</tbody>
</table>

ACES
Adverse childhood experiences

You Tube: youtu.be/YiMjTzCnbNQ

www.aces.me.uk
Adverse Childhood Experiences (ACEs) - The Life Course

- Early Death
- Non Communicable Disease, Disability, Social Problems, Low Productivity
- Adopt Health Harming Behaviours and Crime
- Social, Emotional and Learning Problems
- Disrupted Nervous, Hormonal and Immune Development
- ACEs Adverse Childhood Experiences

Developed from Felitti et al. 1998
Child health and Concurrent ACEs (Age under 18 years)

- **Somatic complaints**
  - Include - Headaches, Digestive problems, Skin disorders

- **Actual Cause**
  - Stress /emotional factors

ACES
Adverse childhood experiences

www.aces.me.uk
National Study of ACEs in Wales (18-69 years)

Compared with people with no ACEs, those with 4+ ACEs were:

- 4 times more likely to be a high risk drinker
- 6 times more likely to smoke tobacco or E-cigs
- 11 times more likely to have smoked cannabis
- 16 times more likely to have used crack cocaine or heroin
- 20 times more likely to have been incarcerated in their life
Exposure to Violence in Last 12 months

- **Hit Someone**: 33%
- **Been Hit**: 37%

**Ages and ACEs Distribution**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>0 ACEs</th>
<th>1 ACE</th>
<th>2-3 ACEs</th>
<th>4+ ACEs</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-29</td>
<td>4%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-39</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-49</td>
<td></td>
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</tbody>
</table>

(England and Wales; n>7000)
**ACEs Life Cycle - Children having Children**

- 4+ ACES vs. 0 ACEs
  - Mother ≤18 years when born

- 4+ ACES vs. 0 ACEs
  - Got a girl pregnant when under 18 years

- 4+ ACES vs. 0 ACEs
  - First child born under 18 years

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**Graph**

- **Y-axis**: Adjusted Odds Ratio
- **X-axis**: ACE Count

**Data**

- 0 ACEs: Adjusted Odds Ratio is 1
- 1 ACE: Adjusted Odds Ratio is approximately 1.5
- 2-3 ACEs: Adjusted Odds Ratio is approximately 2.5
- 4+ ACEs: Adjusted Odds Ratio is significantly higher

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**Graph Details**

- **Legend**:
  - 5x
  - 10x
  - 4x
ACES
Adverse childhood experiences

www.aces.me.uk
Policy - Preventing ACES in England could reduce in adults aged 18-69 years:

- Early sex (before age 16) by 33%
- Unintended teen pregnancy by 38%
- Smoking (current) by 16%
- Binge drinking (current) by 15%
- Cannabis use (lifetime) by 33%
- Heroin/crack use (lifetime) by 59%
- Violence victimisation (past year) by 51%
- Violence perpetration (past year) by 52%
- Incarceration (lifetime) by 53%
- Poor diet (current; <2 fruit & veg portions daily) by 14%

Bellis et al. 2014, n=2028
Prevalence of low mental well-being in adults by the number of ACEs suffered in childhood

<table>
<thead>
<tr>
<th>ACEs 0</th>
<th>ACEs 4+</th>
</tr>
</thead>
<tbody>
<tr>
<td>19%</td>
<td>41%</td>
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</table>

Low mental well-being in adults and ACEs suffered in childhood

Over the past two weeks, compared to people with no ACEs, those with 4+ ACEs were also:

- **3 times more likely** to have never or rarely felt relaxed
- **3 times more likely** to have never or rarely felt close to other people
- **4 times more likely** to have never or rarely been thinking clearly
- **5 times more likely** to have never or rarely to have dealt with problems well
- **5 times more likely** to have never or rarely been able to make up their own mind about things
- **6 times more likely** to have never or rarely felt optimistic about the future
- **6 times more likely** to have never or rarely felt useful
Norway and Childhood Adversity

Psychological + Substance use + Physical Abuse

- Increase in Risk of
  - Poor Mental Health: 175%
  - Poor Health: 89%
  - Low Well-being: 42%

Wales: Length of Healthy Life

Individuals Diagnosed with a Major Disease by Age (%)

Major Diseases
Cancer
Stroke
Type 2 Diabetes
Cardio Vascular Disease
Digestive/Liver Disease
Respiratory Disease

Cumulative % Developed Disease (+/-SE)

0 ACEs
4+ ACEs

Differences remain after adjusting for Deprivation

Adverse Childhood Experiences and their association with chronic disease and health service use in the Welsh adult population; 2016
Diabetes Type 2

ACE Count

- 0
- 4+

Cumulative % Developed Disease (+/-SE)

Age (years)

4 or more vs. No ACEs

3x
more likely to have attended A&E

2x
more likely to have frequently visited a GP**

3x
more likely to have stayed overnight in hospital

ACES
Adverse childhood experiences

www.aces.me.uk
Resilience

transforming potentially toxic stress into tolerable stress

A safe space in which physiological and psychological systems can reset to a tolerable level

Always Available Adult that you trust

Based on Strengthening the Foundations of Resilience, Harvard, 2015; Wales ACE Survey, 2015, n=2028, unpublished data
Four or more ACEs and AAA (Always Available Adult) Status

≥4 ACEs, Does not have an always trusted adult
≥4 ACEs  Always Available Adult

Percentages are calculated using estimated marginal means function and are adjusted through logistic regression modelling for confounding from other variables in the model.

ACEs and Resilience

I enjoyed my community's cultures and traditions
I had people I looked up to
I had opportunities to develop skills to help me succeed in life
I felt I belonged in my school
I knew where to go in my community to get help
I knew where to go in my community to get help
I was able to solve problems without harming myself or others
I was treated fairly in my community
My family would stand by me during difficult times
I tried to finish activities that I started
My parents, caregivers knew a lot about me
Getting an education was important to me
Always Available Adult
Always Available Adult
Culturally Connected

Manage your behaviour and emotions

Guide your destiny and overcome Hardship

The Resilience Research Centre Adult Resilience Measure (RRC-ARM), Wales, 2017
**Childhood Resilience & Adult Mental Health**

(Child and Youth Resilience Measure)

**Childhood Resilience**

- **Low**
- **Moderate**
- **High**

**Felt suicidal or self-harmed**

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<tbody>
<tr>
<td>0%</td>
<td>10%</td>
<td>20%</td>
<td>30%</td>
</tr>
<tr>
<td>40%</td>
<td>50%</td>
<td>60%</td>
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</tbody>
</table>
Low Childhood Resilience = Most missing from
Felt important or special; felt loved; Someone to take care of and protect them. In Family, looked out for each other, felt close, source of strength and support

Suicide Attempt

- Low Childhood Resilience
- Higher Childhood Resilience

Adjusted proportion (95%CI)
School Absenteeism (>20 days/year)
ACEs and Resilience
(Resilience assets include: Given Opportunities, Treated fairly)

Resilience
Low
High

% high school absenteeism

ACE Count

Bellis et al, BMC Public Health, 2018
Safe Environment for Every Kid

lowers rates of child abuse and neglect and harsh parenting

- Parental depression
- Substance abuse
- Major stress
- Intimate partner violence
- Food insecurity
- Discipline challenges

You need to feel good about yourself to be a good parent.

Evidence for preventing child abuse and neglect
Supporting Parents - Preventing ACEs

Nurse Home Visiting

Parenting Programmes

Preschool Enrichment

↓ Child maltreatment
↓ Child injury

↑ High School completion

↓ Violent offences
↑ Employment in mid 20s

Not just new programmes but ensuring services are informed and integrated

First 1000 Days - CymruWellWales

Sethi et al, 2013
ACEs in Challenging High Schools
Example from Washington State Family Policy Council

• ACEs
  • 1/3 of class had 4+ ACEs
  • Best predictor of health, attendance, behaviour
  • Educational success related more to ACEs than income

• Change
  • Public Health and others inform staff about impacts of ACEs

School research has begun in England & Wales

[Links to websites: resilience trumpsaces.org; communityresiliencecookbook.org/tastes-of-success/]
Tackling hidden reasons for accessing Health Care

- **Pre-examination Practice** completed ACE survey
- **At examination** asked, have ACEs affected you in later life?
- **Practice Change**
- **Preliminary Results**
  - General Practice Working: ↓35%
  - Emergency Department: ↓11%
84% thought it important for a health professional to understand what happened in their childhood.

67% - patients with ACEs was first time they had told a professional.

86% felt their GP surgery was a suitable place to be asked about ACEs.

Hardcastle & Bellis 2018
National ACE Hub

ACE Awareness
“I know ACEs are important”

ACE Knowledge
“I know what I can do”

ACE Prevention, Response & Resilience
“I make a difference”

ACE Informed Communities
“We work together”

ACE Skills
“I know how to do it”

ACE Knowledge
“I know what I can do”

ACE Awareness
“I know ACEs are important”
One call every five minutes relating directly to mental health (Metropolitan Police 2017)

9 in 10 police contacts complex welfare, safety & vulnerability (South Wales)
ACEs and the Police

- **Burden** - 61,590 Public Protection Notifications
- **Repeat** - 31% >1 Public Protection Notifications

**Child Public Protection Notifications**
- 72% logged and closed
- 3.2% had Care and support plan

Events:
- Verbal Abuse
- Separation
- Alcohol Abuse
- Mental Health
- Drug Use
- Incarceration
- Domestic Violence
- Sexual abuse

* A sample of 1,394 PPN referrals to Childrens services in 1 local authority
ACEs and the Police

Police and Public Health Wales Memorandum of Understanding

Ensure that from the earliest possible age individuals are supported to follow a health benefiting and crime free life course.
Reporting to schools before the start of the next school day when a child or young person has been involved or exposed to a domestic abuse incident the previous evening.
ACEs, Housing and Homelessness

- **Staff** understand ACEs impact on housing
  - Addressing tenant’s past
  - Stop intergenerational transmission of ACEs

- Levels of ACEs and their role in homelessness
- Tools - skills and knowledge to enquire, intervene and prevent intergenerational transmission
ACEs - Part of Inequalities

• 3x more people suffered ≥4 ACEs in most deprived versus most affluent areas

• In all areas:
  • More ACEs = More smoking, alcohol misuse, early sexual activity and premature ill health across the life course

England, Bellis et al. 2014, n=3885
Individuals with ACEs tended to perceive public services as being less supportive

Perceptions of service supportiveness as not supportive at all

% not supportive at all

0 ACEs 4+ACEs

0 ACEs

4+ACEs

Health

Social services

Police

Charities

Mental health

Employer*

* where applicable
Parental Alcohol Misuse implicated in 37% of death or serious injury of a child through neglect or abuse

1 in 20 adults in last 12 months

HARMS TO OTHERS

The harms from other people's alcohol consumption in Wales

Measuring Success for Policy

Health Behaviour in School-aged Children

- Routine Measure
- ACE Module
  - 4 EU Countries use some or all of it
- The Right of the Child to be Heard (UN Rights of the Child No. 12)

Children who are silenced cannot challenge violence and abuse perpetrated against them (UNICEF, Save the Children)
Vulnerability and Age in Brain Development

**Corpus Callosum**
- Infancy
- Language, Maths
- Neglect

**Cortex**
- First 2-3 years
  - Judgment
  - All Maltreatment
- 8-10 Years
  - Reasoning
  - Witnessing Domestic Violence

**Hippocampus Amygdala**
- Ages 3-5, Fear, Panic
- Understanding Emotion

**Sexual Abuse**

Based on Washington State Family Council; Nash, 1997; Early Years Study, 1999; Shonkoff, 2000
Childhood Adversity as Motivator?

• Creativity in Performing Arts

• Excellence in Sports Performance

• Preference for Caring Careers
Adverse Childhood Experiences (ACEs) are linked to a range of negative outcomes throughout the life course. These outcomes include:

1. **Early Death**
2. **Non-Communicable Disease**, Disability, Social Problems, Low Productivity
3. **Adopt Health Harming Behaviours and Crime**
4. Social, Emotional and Learning Problems
5. Disrupted Nervous, Hormonal, and Immune Development
6. ACEs Adverse Childhood Experiences
7. Pre-conception and Fetal Epigenetic effects

The pyramid illustrates the cascade of effects from ACEs to adverse outcomes. Investing in early life, before pre-conception and fetal stages, can help build stronger children or mend broken adults.
Summary: Adverse Childhood Experiences

- Prevention is possible
- A Major Cause of Non-Communicable Disease
- Exposes Health and Economic value of good parenting
- Need consideration across the life course
- Develop individual and community resilience
- Impacted by Environment (e.g. poor alcohol control)
- Impact inequalities
- Joint agenda for Health, Social, Education and Crime
- Require a Unified Research Agenda
- Inter-generational benefits from breaking the cycle
- Better informed parents make better life-course choices
- A trusted adult can make a remarkable difference
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