Ageing with an Intellectual Disability in Ireland

Prof Mary McCarron
Dean Faculty of Health Sciences Trinity College Dublin
Professor of Ageing and Intellectual Disability
PI of IDS-TILDA
Celebration & challenge of ageing

• A success story
• Little known ageing
• Promoting life long health
• Maintaining independence
• Postponing disability
• Reorienting ID services
• Mainstreaming agenda
• Integrating health and social services
Mortality rates in the General Irish population compared to those with ID from 2003 – 2012
Summary of mortality findings

Mortality almost four times higher in ID population than in general population (SMR = 385; 95% CI = 370,400) and rates varied with age.

Mortality higher in women across age groups
Average age of death 19.07 years earlier than for the general population
54.73 years compared with 73.80 years
The Irish Longitudinal Study on Ageing

The global family of longitudinal studies

- HRS: Health and Retirement Study (U.S.A.)
- CLSA: Canadian Longitudinal Study on Aging
- MHAS: Mexican Health and Aging Study
- ELSI-Brasil: Brazilian Longitudinal Study of Health, Ageing and Well-Being
- TILDA: The Irish Longitudinal Study of Ageing
- ELSA: English Longitudinal Study of Ageing
- SHARE: Survey of Health and Retirement in Europe
- NICOLA: Northern Ireland Cohort Longitudinal Study of Ageing
- THSLS: The Scottish Longitudinal Study of Ageing
- CHARLS: China Health and Retirement Longitudinal Study
- LASE: The Longitudinal Ageing Study in India
- KLoSA: Korean Longitudinal Study of Ageing
- ALSA: The Australian Longitudinal Study of Ageing
The Intellectual Disability Supplement to The Irish Longitudinal Supplement on Ageing

- Identifying the principal influences on ageing
- Understanding the contributors to successful ageing, health & quality of life in older persons with ID
- Building on the baseline to contribute to changes in policy and practice

“truly included people with intellectual disability in an evidence based academic process speaking for themselves which is hugely important”

(Minister K Lynch TD)
Refined and developed the conceptual framework IDS-TILDA
Celebrating ageing, increasing visibility of people with ID and promoting inclusion

IDS-TILDA VALUES FRAMEWORK UNDERPINNING ALL ASPECTS OF THE RESEARCH LIFECYCLE

- Promotion of people with ID
- Promotion of best practice
- Person Centred
- Empowerment
- Inclusion
- Choice
- Contribution to the lives of people
IDS-TILDA participation

10% randomly selected from NIDD ≥40 years

Wave 1: 2011 8.9% (N=753); 55% Female 45% Male; 138 Services; All levels of ID

Wave 2: 2014 94% retention (N=708/753)

Wave 3: 2017 86% retention (N=609/708)
Undertaking the study

- **Questionnaires** - Pre-Interview Questionnaire, Face-to-Face Interviews using CAPI and Carers Questionnaire
- **Interview style** – Independent, supported or proxy
Older adults with an intellectual disability – their understanding of the concept of ageing?
Getting old
Good things about getting old
Concerns about growing old

Diagram showing the relationships between different concerns related to aging, such as physical changes, illness, future care, fear and vulnerability, loss of independence, loss and death, and depression. The diagram includes a legend indicating the number of respondents who reported each concern.
“I think old people are wise and have more experience and can do some of the activities that all other people can do of course in my case running is out cause I get too tired, I prefer to walk at a nice pace”
Chronic conditions and complex needs
## Multi-morbidity

<table>
<thead>
<tr>
<th></th>
<th>IDS-TILDA W1</th>
<th>TILDA W1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Multimorbidity Prevalence</strong></td>
<td>• 71.2%</td>
<td>• 58.6%</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>• 63% aged 40 – 49 years</td>
<td>• Older age cohort</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td>• Females twice as likely to be multi-morbid than males</td>
<td>• Equal gender distribution</td>
</tr>
<tr>
<td><strong>Pairs of Chronic Conditions</strong></td>
<td>• Eye Diseases • Mental Health Concerns • Joint Disease • Neurological Disease • Gastrointestinal</td>
<td>• Hypertension • Heart Disease • Stroke • Diabetes</td>
</tr>
</tbody>
</table>
Patterns of multimorbidity in an older population of persons with an intellectual disability: Results from the intellectual disability supplement to the Irish longitudinal study on aging (IDS-TILDA)

Mary McCarron, Janet Swinburne, Eilish Burke, Eimear McGlinchey, Rachael Carroll, Philip McCallion

*School of Nursing and Midwifery, Trinity College Dublin, Ireland
*Center for Excellence in Aging and Community Wellness, University at Albany, Albany, NY 12222, USA
Changes in prevalence of chronic conditions

- Epilepsy: Wave 1: 31.4%, Wave 2: 35.7%
- Thyroid disease: Wave 1: 17.9%, Wave 2: 17.3%
- Chronic constipation: Wave 1: 17.3%, Wave 2: 37.9%
- Gastroesophageal reflux disease: Wave 1: 12.5%, Wave 2: 10.8%
- Stomach ulcers: Wave 1: 4.3%, Wave 2: 5.2%
Changes in prevalence of chronic conditions

- Arthritis: 16.9\% (Wave 1), 10.6\% (Wave 2)
- Cataracts: 19.1\% (Wave 1), 12.8\% (Wave 2)
- Osteoporosis: 16.4\% (Wave 1)
- Cancer: 8.0\% (Wave 1), 2.9\% (Wave 2)
- Lung disease: 5.0\% (Wave 2)
- Hip fractures: 1.4\% (Wave 2)
- Macular degeneration: 2.7\% (Wave 2)
Hypertension prevalence, gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>IDS-TILDA</th>
<th>TILDA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>44.9</td>
<td>68.7</td>
</tr>
<tr>
<td>Females</td>
<td>38.7</td>
<td>59.3</td>
</tr>
<tr>
<td>Total</td>
<td>41.2</td>
<td>63.7</td>
</tr>
</tbody>
</table>
Awareness, treatment and control

- **Awareness**
  - IDS-TILDA: 47.8
  - TILDA: 54.5

- **Treated**
  - IDS-TILDA: 68.8
  - TILDA: 58.9

- **Control**
  - IDS-TILDA: 70.0
  - TILDA: 51.6
Questions remain?

If risk levels are similar but prevalence is lower are there other contributing risks in the lives of the general population such as greater exposure to psychological stresses which while present in the lives of people with ID are likely to be somewhat different?
Dementia
Comparative rates of dementia
Down’s syndrome, I.D., general population

Holland 2011
Point prevalence of dementia in Down Syndrome over 3 year period

Prevalence of dementia among people with Down syndrome

WAVE 1: 15.8%
WAVE 2: 29.9%

The prevalence of epilepsy increased from 19.2% to 27.9% for those with Down Syndrome
A Prospective 20 Year longitudinal follow-up of dementia in persons with Down Syndrome
Risk trajectory according to age

Age 65 = 88% Risk
Age 55 = 45% Risk
Age 50 = 23% Risk
Dementia and epilepsy

77.9% (60 of the 75 with dementia) had epilepsy

Life Time Prevalence

- LTP Dementia
- LTP Epilepsy

Age (yrs)

%
Dementia, epilepsy & depression

48% of those with dementia were also reported to have depression.
Mortality

Median survival = 7 years
Some key conclusions

<table>
<thead>
<tr>
<th>Substantial increased risk of dementia &gt;50 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUT .......</td>
</tr>
<tr>
<td>• Survival less precipitous than previously reported</td>
</tr>
<tr>
<td>• Rate of progression varies among individuals.</td>
</tr>
<tr>
<td>• Anecdotal reports of adults with Down syndrome “falling off a cliff” reflect unusual cases.</td>
</tr>
<tr>
<td>• High risk of new onset epilepsy</td>
</tr>
<tr>
<td>• Little Impact for level of LD</td>
</tr>
<tr>
<td>• Increased survival at advanced dementia</td>
</tr>
</tbody>
</table>
Cognitive Training with Adults with Down syndrome

Dr Eimear McGlinchey
Research Fellow, IDS-TILDA
The BEADS Study

Brain Exercises for Adults with Down Syndrome
Reasons for conducting study

- Little research on computerised cognitive training with this population
- Adults with DS at greater risk of executive dysfunction
- Promising evidence in the general population on effects of cognitive training

Brain Exercises for Adults with Down Syndrome
## Results

### Overview Feasibility

<table>
<thead>
<tr>
<th>Participant</th>
<th>Can participants play and progress the games?</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Do participants adhere to the training program?</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Do participants enjoy the cognitive training program</td>
<td>✓</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Support Person</th>
<th>How much support is needed to complete the training program?</th>
<th>60% completed independently by end of program</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>How much training is involved for those supporting participants?</td>
<td>1 training session</td>
</tr>
</tbody>
</table>

| Environment | Can the program be implemented in different environments? (e.g. at home and in day service) | Environment did not appear to have an effect on performance |
## Executive Function Scores: Pre and Post Intervention

<table>
<thead>
<tr>
<th>Behaviours of Executive Function</th>
<th>Mean Pre</th>
<th>Mean Post</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhibit</td>
<td>49.4</td>
<td>47.2</td>
<td>.067</td>
</tr>
<tr>
<td>Shift</td>
<td>62.8</td>
<td>59.7</td>
<td>.225</td>
</tr>
<tr>
<td>Emotional Control</td>
<td>52.6</td>
<td>48.2</td>
<td>.001</td>
</tr>
<tr>
<td>SelfMonitor</td>
<td>55.4</td>
<td>53.5</td>
<td>.385</td>
</tr>
<tr>
<td>Behavioural Regulation Index</td>
<td>54.7</td>
<td>51.8</td>
<td>.033</td>
</tr>
<tr>
<td>Initiate</td>
<td>61.5</td>
<td>55.1</td>
<td>.006</td>
</tr>
<tr>
<td>Working Memory</td>
<td>63.2</td>
<td>57.5</td>
<td>.015</td>
</tr>
<tr>
<td>Plan/Organise</td>
<td>56.5</td>
<td>53.4</td>
<td>.065</td>
</tr>
<tr>
<td>Task Monitor</td>
<td>60.0</td>
<td>58.6</td>
<td>.576</td>
</tr>
<tr>
<td>Organise materials</td>
<td>45.0</td>
<td>43.0</td>
<td>.148</td>
</tr>
<tr>
<td>Meta Cognitive Index</td>
<td>57.3</td>
<td>53.2</td>
<td>.004</td>
</tr>
<tr>
<td>Global Executive Composite</td>
<td>56.6</td>
<td>52.9</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>
## Behaviours of Executive Function*

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Mean</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inhibit</strong></td>
<td>49.6</td>
<td>47.7</td>
<td>.556</td>
</tr>
<tr>
<td><strong>Shift</strong></td>
<td>61.0</td>
<td>61.1</td>
<td>.981</td>
</tr>
<tr>
<td><strong>Emotional Control</strong></td>
<td>49.1</td>
<td>45.8</td>
<td>.002</td>
</tr>
<tr>
<td><strong>Self-Monitor</strong></td>
<td>60.8</td>
<td>59.4</td>
<td>.412</td>
</tr>
<tr>
<td><strong>Behavioural Regulation Index</strong></td>
<td>54.5</td>
<td>52.4</td>
<td>.005</td>
</tr>
<tr>
<td><strong>Initiate</strong></td>
<td>56.1</td>
<td>54.0</td>
<td>.165</td>
</tr>
<tr>
<td><strong>Working Memory</strong></td>
<td>59.5</td>
<td>57.3</td>
<td>.104</td>
</tr>
<tr>
<td><strong>Plan/Organise</strong></td>
<td>50.6</td>
<td>49.7</td>
<td>.431</td>
</tr>
<tr>
<td><strong>Task Monitor</strong></td>
<td>61.6</td>
<td>62.1</td>
<td>.740</td>
</tr>
<tr>
<td><strong>Organise materials</strong></td>
<td>44.9</td>
<td>42.9</td>
<td>.030</td>
</tr>
<tr>
<td><strong>Meta Cognitive Index</strong></td>
<td>54.3</td>
<td>52.7</td>
<td>.130</td>
</tr>
<tr>
<td><strong>Global Executive Composite</strong></td>
<td>53.1</td>
<td>52.8</td>
<td>.862</td>
</tr>
</tbody>
</table>
Results

What this tells us

Feasibility: Conducting a computerised cognitive training program with adults with Down syndrome is feasible

Effect of Neuropsychological Assessments: These results suggest that cognitive training does show promise for improvements in EF as measured by neuropsychological assessments.

Effect on everyday behaviours: The changes in scores on the BRIEF-A within participants were not as marked for behaviours of executive function as was seen for the neuropsychological assessments. Could be due to transfer effects.
An exploration of the bone health of older adults with an intellectual disability

Dr. Eilish Burke
Ussher Assistant Professor in Ageing and Intellectual Disability
Why explore bone health

Est. 300,000 people in Ireland have osteoporosis.

1 in 5 men and 1 in 3 women will develop a fracture due to osteoporosis.

In the over-60s age group in Ireland, the mortality as a direct consequence of hip fracture is 20% within 6 to 12 months.
Health Fair

The challenge of measuring bone quality in people with ID

OS CALCIS - calcaneus bone
PREVALENCE VERSUS DOCTOR’S DIAGNOSIS
Wave 2 (Health Fair N=575)

- Doctor’s diagnosis: 14.4%
- QUS OM osteopenia: 33.2%
- QUS OM Osteoporosis: 41%
- Almost 75% Poor bone health
Key findings

Overall 2/3 of participants were taking medicines that contributed to poor bone health

Over 1/5 of participants reported a history of fracture

Over 50% of the participants with Down syndrome had evidence of poor bone health

Men with ID were 12 times more likely to present with objective evidence of osteoporosis than their peers in the general population TILDA
Predictors of Osteoporosis

Chi-squared Automatic Interaction Detector Analysis (CHAID) Osteoporosis

Difficulty walking $p<0.0001$

AED $p=0.004$

PPI $p=0.043$

45.1%

87.2%

60%

93.5%
Clinical practice & research implications

Considerations

- Are the general population risk factors the most critical for people with intellectual disability?
- Education requirements for all healthcare professionals is imperative especially those in primary health care who are unfamiliar with the field of intellectual disability.
- There is a need to establish assessment criteria specific to people with intellectual disability.
- We need to consider how diagnosis is established to ensure standardised approach.

Screening Strategy

Risk observation and identification

Implementation of prevention strategies to include diet, exercise & supplementation

Increased education and awareness

Multidimensional Approach
Medication use and polypharmacy in older adults with intellectual disabilities

Dr Máire O’Dwyer
Assistant Professor in Practice of Pharmacy
Polypharmacy and excessive polypharmacy

IDS-TILDA

IDS – TILDA (n=736) (40+ years)

- 0-4 medicines: 48%
- 5-9 medicines: 31%
- 10+ medicines: 21%

Classification

- No-polypharmacy: 0-4 medicines
- Polypharmacy: 5-9 medicines
- Excessive polypharmacy: 10+ medicines

TILDA (Irish General Population 50+ years, n=8038) (Richardson et al 2012)

- 5-9 medicines: 19%
- 10+ medicines: 2%
Frequently reported therapeutic classes: 
IDS-TILDA Wave 1

<table>
<thead>
<tr>
<th>Drug Class</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lipid Modifying Agents</td>
<td>33</td>
</tr>
<tr>
<td>Agents acting on the renin-angiotensin system</td>
<td>26</td>
</tr>
<tr>
<td>Anti-thrombotic Agents</td>
<td>25</td>
</tr>
</tbody>
</table>

Trinity College Dublin, The University of Dublin
Change in prevalence in medication use

- Antipsychotics: Wave 1 = 43.3, Wave 2 = 45.5
- Antiepileptics: Wave 1 = 43.4, Wave 2 = 45.5
- Laxatives: Wave 1 = 36.9, Wave 2 = 41.7
- Analgesics: Wave 1 = 36.6, Wave 2 = 36.9
- Antidepressants: Wave 1 = 25.6, Wave 2 = 28.5
Contribution of Drug Classes to Total ACB Score in Participants (n=736)

- Antipsychotics: 36%
- Anticholinergics: 16%
- Antiepileptics: 11%
- Antidepressants: 11%
- Gastrointestinal Drugs: 8%
- Anxiolytics: 5%
- Antihistamines: 4%
- Urologicals: 3%
- Cardiac Drugs: 3%
- Respiratory Drugs: 2%
- Other: 1%

Association of anticholinergic burden with adverse effects in older people with intellectual disabilities: an observational cross-sectional study

Mário J.O'Meara, Isla D. Madimba, Kathleen Bennett, Jure Peklar, Niamh Mulryan, Philip McCallan, Mary McCarron and Martin C. Heffernan

New questions to be addressed

Is inappropriate polypharmacy associated with adverse health outcomes in older adults with ID?

Is high burden of sedative and anticholinergic effects associated with negative outcomes such as cognitive decline, frailty and mortality?

How can we reduce the burden to improve appropriate use of these medicines and improve patient outcomes and quality of life?
Transitions and choice for older people with ID

Dr Mary-Ann O’Donovan

Assistant Professor in Intellectual Disability and Inclusion
Transitions and choice

Aim

• To track the housing mobility and living transitions of older people with ID
• To examine the extent of personal choice in housing transitions
• To explore the impact of moving on health and health service utilisation

Research approach within IDS-TILDA

• Participants who changed place of residence between data collection waves
Key findings

Some people with ID are changing where they live

- Not always by choice
- Not always involved in decision process
- Not always to the community
- Some return to service provider for health care
Why is this research important?

First indication of policy implementation on national level to track ...

• Impact of moves on people with ID

• Input of people with ID in decisions to move
Highlights the continuing need to ...

• Address human rights of people with ID in making choices

• Reconfigure community to sustain and support community living by people with ID

• Explore relevancy and appropriateness of ‘Ageing in Place’ for people with ID
Social and community participation of older people with intellectual disabilities

Dr Darren McCausland
Research Fellow, IDS-TILDA
Findings: Networks and Relationships

• Very different social networks
  • Many (43%) have no friends outside their home
  • Hardly any marry or have children
  • Paid staff replace intimate family networks
    • Important roles in supporting social activities
    • BUT also as close friends/confidants
• Type residence strongest factor in having friends
  (Ind/Family x 17)
  • Other factors: literacy, mental health, FL (IADLs)
• Only 40% had weekly family contact
  • Proximity to family strongest factor
  • Other factors: FL (IADLs), age, communication
Findings: Social Activity

• Vast majority OPWID are socially active (3% inactive)

• Most common activities:
  • Eating out (85%); Coffee (82%); Shopping (76%); Hairdresser (71%); Church (62%); Visit family/friends (60%); Cinema, theatre or concert (59%); Pub (57%)

• Choice? Group activities?
  • Less than ½ choose who they spend free time with
  • Only 1 in 3 choose where they go in their free time

• Family contact the strongest predictor of social activity
  • Other factors: mental health; FL (I/ADLs); physical health; having friends
Local Community (LC) Participation

- 1 in 4 member of a group in their LC
  - IADL functioning strongest predictor of membership
  - Other factors: Residence; Literacy; Friends
- Family contact strongest predictor of social activity in LC
  - Other factors: Mental health; Residence; Literacy
- 3 in 4 had difficulty participating in LC
  - Residence the strongest predictor of having difficulty
  - Other factors: Physical health; Level of ID; ADL functioning
Findings: Outcomes of SP

Subjective outcome: Self/proxy-rated Emotional or Mental Health

- Across all 17 measures of participation (12 statistically significant)
- Of these measures, **having friends outside your home** was the strongest predictor of better EMH
Some Conclusions

• SP is complex – multiple factors influence experiences
  • Personal characteristics; demographic; social
  • Must not focus narrowly on one factor
  • Support needs don’t disappear with move to community
• OPWID have greater challenges to participation, and
• Lower rates of participation than GOP
• Paid staff an important social support where natural supports are limited
• Participation related to better subjective outcomes for OPWID
• OPWID at risk of worse QOL and other outcomes
• Individualised approach required in policy and support services
Future questions

• What is community? What is community for older people with ID?
• What is the qualitative experience of older people with ID living in their local communities?
• What relationships are important to older people with ID?
• How inclusive and welcoming are local communities to older people with ID?
Loneliness in older people with an Intellectual Disability

Andrew D. Wormald
PhD Student, IDS-TILDA
How is loneliness experienced by older people with an ID

<table>
<thead>
<tr>
<th>Section</th>
<th>Question</th>
<th>Wording</th>
<th>Response set</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social</td>
<td>SC8</td>
<td>Do you ever feel lonely?</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Connectedness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC9</td>
<td>How often do you feel lonely?</td>
<td></td>
<td>Most of the time/Some of the time/Hardly ever or Never</td>
</tr>
<tr>
<td>SC10</td>
<td>Do you ever feel left out?</td>
<td></td>
<td>Yes/No</td>
</tr>
<tr>
<td>SC11</td>
<td>How often do you feel left out?</td>
<td></td>
<td>Most of the time/Some of the time/Hardly ever or Never</td>
</tr>
<tr>
<td>SC12</td>
<td>Do you find it difficult to make friends?</td>
<td></td>
<td>Yes/No</td>
</tr>
<tr>
<td>SC13</td>
<td>How often do you feel you lack friendship</td>
<td></td>
<td>Most of the time/Some of the time/Hardly ever or Never</td>
</tr>
<tr>
<td>SC14</td>
<td>Do you ever feel isolated?</td>
<td></td>
<td>Most of the time/Some of the time/Hardly ever or Never</td>
</tr>
</tbody>
</table>

Self Report Only
N=317
How is loneliness experienced?
Protective against loneliness

- Education
- Working in the community
- Having more chronic conditions
- Holidaying Abroad
- Individualised Personal Plans
- Confiding in Staff
Family Care Giving

Dr Damien Brennan
Assistant Professor, School of Nursing and Midwifery,
Trinity College
Some points of context

• After prolonged and intensive use of institutions, Ireland is entering a ‘post-institutional’ era

• People with ID are living longer

• People with ID rarely form their own ‘traditional’ family structure

• People with ID will need support as they age

• Caring capacity within the family setting is diminishing in contemporary Ireland

• This raises questions and challenges regarding the future supports needed for older people with ID
Family Care Giving for Older People with Intellectual Disability

Key research questions

• What are the experiences of family care givers
• What family strategies best enable family care giving
• How can long-term care needs be anticipated and planned for
• Love, devotion, and commitment underpins caregiving

• However, many carers are under significant stress and experience poor health

• Most families feel that they represent the last remnant of family caregiving capacity

• Future care plans were not discussed between family members

• Uncertainty regarding who ‘Responsible’ for caring in Irish Society?

  The State / The Family / The Person who requires Care

I absolutely adore her, I love her and she is the grandparent that they didn’t have, that the kids didn’t have (Participant, Urban Focus Group)

What’s going to happen when we’re gone? Now the girls idolise him but it... it no way I think that they should have to have him

I assumed that once I made their decision to look after [sister’s name] that would be the end of the line. I never thought that there, that you know there might be another handover situation
Why is this research important?

• The family is identified as the main context of care provision in the ‘post-institutional’ era

• Socio demographic factors are diminishing caring capacity within the family

• Policy planning is required so as to avoided a resurgent demand for residential (institutional) care for older people with ID
New questions to be addressed

• How can family care giving be measured and costed

• How can political choices and social policy maximise the care giving within families

• How can the findings be applied to other fields. (child care, life limiting / chronic conditions, mental illness, palliative care)
thank you
Acknowledgement

Grateful appreciation to the participants and families

The funders and supporters