FY21 1st Prenatal / Early Childhood Grant Call

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Biomedical Research Council
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CREATING GROWTH, ENHANCING LIVES
Evolution in the landscape moving into RIE2025

Healthcare Transformation & Key Global Trends
- Precision Health
- Population Health
- Preventive Healthcare

Changing Economic Value creation models
- Digital Health Opportunities
- Growing competition & opportunities

COVID-19
- Accelerating demand for telehealth
- Increasing importance of data integration & analytics
- Increased investment in diagnostics, drug devt and mfg
Why Human Potential?

CHALLENGES

- Declining birth rates
- Declining workforce
- Ageing population

OPPORTUNITIES TO ADVANCE HP

- Enhancing Physical Health
- Improving Mental Health
- Improving Learning Outcomes
- Active Ageing

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Vision and Primary Outcome

*Human Potential* as an integral part of *Health & Biomedical Sciences research* and its applications in RIE2025:

**VISION**

To advance Human Potential in *health, biomedical sciences and science of learning* research and its applications at *critical junctures* of an individual’s life course.

**PRIMARY OUTCOME**

An individual is provided the support and opportunity to **develop optimally at critical junctures of his/her life course**. This will enable the individual to **achieve optimal health, well-being and/or learning capacity** to contribute his/her best to Singapore.
Human Potential Strategic Approach

Leverage HBMS and Social Science research to optimize early life outcomes.

Leverage Science of Learning (SoL) and related HBMS research to improve learning outcomes and upskilling of workers.

Leverage multi-disciplinary research to prevent/delay physical and cognitive decline and bring about healthy and meaningful longevity.

Preconception and pregnancy
Early childhood
Childhood
Adolescence
Adulthood
Older adulthood
The Early Life grant call is an open grant call covering the Prenatal and Early Childhood period from pre-conception, pregnancy to early childhood (-1 to 6 yrs of age).

Applicants should address one or more of the following priorities in their proposals, with preference to research that result directly or indirectly to improving maternal and child well-being, as well as child health and learning:

**Desired Outcomes from Early Life Research**

**Improving child health, learning and well-being**

i. Healthy children through the reduction of childhood obesity and other conditions such as myopia

ii. Reduction in children requiring learning support

iii. Emotionally stable, resilient children with high self-regulation

**Improving maternal health and well-being**

i. Healthy mothers during and after pregnancy; healthy babies through improved maternal physical health

ii. Healthy babies through improved family mental wellness; emotionally stable and resilient mothers

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Desired Outcomes for Child Health, Learning & Well-being

**Possible area of focus**

- **Physical Health**
  - Obesity, Feeding Behaviour, Myopia

- **Socio-Emotional Development & Mental Wellness**
  - Socio-emotional development programmes in preschools

- **Cognitive & Intellectual Development**
  - School Readiness, Whole Child Assessment, Sleep

**Long-term Outcome**

- **Healthy children** by reducing obesity rates & other conditions such as myopia

- **Emotionally stable, resilient children** with high self-regulation

- **Children are more ready for school** and have lower likelihood of requiring learning support

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Research areas in Child Health, Learning & Wellbeing

Child nutrition, obesity and other conditions
1. Development of novel and effective interventions to reduce childhood obesity, associated metabolic disorders and other physical conditions like myopia.
2. Development of potential interventions to improve development of cognitive function in children.

Cognitive & intellectual development
1. Development of novel tool kits or methods to determine early child cognitive and executive functions and interventions to improve learning outcomes and reduce need for learning support in Primary school.
2. Investigation of factors influencing cognitive development such as early exposure to electronic gadgets and sleep disruption.

Socio-emotional development and mental wellness
1. Identification of modifiable early life factors (e.g. pre-school programmes, interactions with parents/caregivers) that affect socio-emotional development and resilience in pre-school children.
2. Development of novel tools or methods for assessments and interventions to improve socio-emotional development.

Examples:
- Interventions targeting parental feeding practices and eating behavior
- Impact of sleep on Singaporean children and effects on cognitive function and mental health
- Pre-school programmes to enhance executive function and emotional regulation
Desired Outcomes for Maternal Health & Well-being

**Metabolic Health**
- Possible area of focus: Gestational and Type 2 Diabetes (GDM/T2D)
- Long-term Outcome: Healthy mothers during and after pregnancy

**Mental Wellness**
- Possible area of focus: Depression & Anxiety
- Long-term Outcome: Emotionally stable and resilient mothers

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Research areas in Maternal Health & Well-being

**Metabolic Health**

1. Identification of early factors with life course impact on maternal metabolic health.
2. Development of novel and effective interventions for improving maternal metabolic health outcomes during and after pregnancy (e.g. reduce rate of mother diagnosed with gestational diabetes mellitus from progressing to pre-diabetes/type 2 diabetes).

**Mental Wellness**

1. Identification of early factors with negative or positive life course impact on maternal mental health.
2. Development of novel diagnostics for early detection of women/mothers at risk of anxiety and depression.
3. Development of novel and effective interventions for improving maternal mental health outcomes during pregnancy (e.g. reduce anxiety/depression).

**Examples:**

- Design personalized web-based therapies for Singaporean mothers using AI-informed content
- Interventions targeting parenting of children over the first 18 months of life to nurture language and cognitive development
**Grant Call Categories**

**1st Early Life Grant Call** seeks to support targeted research in child and maternal health, preferably with a clear pathway to translation.

1. **Encouraging a Broad Base of Research**
   - Funding Quantum: Up to $1 million* for Investigator Research Grants

2. **Mount programmatic and collaborative research to achieve near- to mid-term impact**
   - Funding Quantum: Up to $5 million for Collaborative POC / Pilot studies

*Preference will be to award grants at quantums of ~$500k so that more researchers can benefit.

**2nd & 3rd Early Life Grant Call**

- **PILOT TRIALS** based on research evidence to conduct small scale studies with ops agencies, with intent to change practices, guidelines & policies
  - Funding Quantum: Up to $10 million for pilot trials/intervention studies

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Scope of Grant Call

Funding basic and applied research with clear vision towards and potential for translation and impact

Encouraged to

- Leverage existing HBMS, social science and SoL research capabilities in the proposals to strengthen utility and impact
- Partner relevant public/private sectors to facilitate downstream translation or deployment (if applicable)

Applications should emphasize potential for translational impact to address important gaps in national policy and practice in health, education and social services.

Grant call will prioritize applications in areas that provide evidence for innovation in policy/practice/service in early childhood development and maternal outcomes: E.g.

i. Neuroscience-informed and mechanism-defined interventions/platform technologies/tool kits
ii. Advanced data analytics and computational modeling to identify ‘at-risk’ individuals or critical mediational pathways as novel targets for intervention
iii. Innovation in technologies (e.g. biosensors, AI-solutions) that provide tool kits to inform assessment of risk/outcome in relevant population
iv. Leverage available data as opportunities to validate new approaches
v. Innovation in the development of computation strategies for large data set analysis to enhance the value of existing data sets towards priority areas
vi. Scalable lab and clinical methods that can be deployed for use in natural environments
vii. Low cost mobile wearable devices and home based systems to assess interplay of cognitive development, social and physical interactions

Proof-of-concept studies/trials should discuss how they can be scaled up for larger trials/intervention studies.
Eligibility Criteria

1. Researchers from all Singapore-based institutions of higher learning, public sector agencies, public hospitals
2. Grant proposals should only be submitted by one lead Principal Investigator (PI)
3. The Lead PI must have
   - a minimum of 0.7 FTE primary appointment in a Singapore publicly funded research or tertiary institution and be salaried by the institution
   - has a laboratory or research programme that carries out research in Singapore; and
4. Collaboration with foreign organisations and experts in the capability of a Co-investigator or a Collaborator is allowed, but no funding will be allocated to the foreign Co-investigator/Collaborator who are operating out of Singapore.

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<tr>
<th>For Investigator Research Category (Up to $1 million)</th>
<th>For Collaborative POC / Pilot studies Category (Up to $5 million)</th>
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<tr>
<td>• Young, mid or senior investigators can apply</td>
<td>• Lead PIs should demonstrate relevant scientific/technical</td>
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<td>• Young investigators* are strongly encouraged to work</td>
<td>background and have a good track record as an independent PI in</td>
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<td>with a mentor for research guidance if they have not</td>
<td>leading and coordinating research programmes, as well as</td>
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<td>received external competitive funding exceeding</td>
<td>achieving productive research outcomes (e.g. award of</td>
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<td>$500,000 (direct cost only) within the last 5 years</td>
<td>nationally competitive funding, substantial publication</td>
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<td>to conduct their own research project as the PI</td>
<td>record in the past 3 years)</td>
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*must have completed their PhD or MBBS/MD/BDS within the past 7 years and past 10 years respectively, whichever date is later
**Evaluation Criteria**

**Contribution to Grant Objectives**

- Relevance, scientific value and amount of contribution of proposed research in addressing the challenge(s) posed.

**Scientific Excellence and Innovation**

- Quality and significance of proposed research, including the potential for breakthrough/innovation to advance knowledge and understanding within its own field or across different fields.

**Potential for Deployment in Singapore (primarily)**

- Potential and feasibility for application and translation of research outcomes/solutions with local agencies or organisations (public and/or private sectors), and even beyond Singapore.

**Execution Strength & Technical Competency of Research Team (for programmatic grants)**

- Quality and delivery of execution plans.
- Quality and track record of research team, including likely multi-disciplinary research, synergy in delivering research and potential for international leadership.

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## Timeline

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<th>Item</th>
<th>Dates</th>
<th>Remarks</th>
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<tr>
<td>LOI submission</td>
<td>By 8 Nov 2021</td>
<td>Applicants to apply via iGMS only</td>
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<td>Notification of selected LOIs</td>
<td>29 Nov 2021</td>
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<tr>
<td>Full Proposal Submission</td>
<td>29 Nov. 2021 to 27 Dec. 2021</td>
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<td>Endorsement by Human Potential Steering Committee</td>
<td>Mid-End Feb. 2022</td>
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<td>Budget finalisation</td>
<td>Mar. 2022</td>
<td>Applicants will be informed of their in-principle approval and will work with grant team on the required processes</td>
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<td>Letter of Award and commencement of grant</td>
<td>1 Apr. 2022</td>
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Key points to note

• Projects should leverage existing HBMS, social science and wider S&T ecosystem where possible.

• Cross-domain and cross-life course projects will be prioritised, as will proposals involving collaborations across disciplines.

• Projects need not result in translational/implementable projects in the short-term, but should articulate a clear and realistic pathway towards implementation.

• Funding will be provided on a **reimbursement basis**, on a regular basis (e.g. half yearly)

• Budget projections should be on a **cash accounting** basis (i.e. FY21 projections should be expensed in FY21).
Point of Contact

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Q&A
THANK YOU

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