VOLUME 5

EARLY BRAIN & BIOLOGICAL DEVELOPMENT: A SCIENCE IN SOCIETY SYMPOSIUM

Summary Report

MAY 28 – JUNE 1, 2012 BANFF, ALBERTA, CANADA

Alberta family wellness initiative

Norlien Foundation
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Purpose of Report

This report is the fifth in a series of summary reports describing the Norlien Foundation's broad knowledge-mobilization efforts in early brain and biological development, mental health, and addiction.

Writer/Editor

Marylu Walters, MSc, Edmonton, AB

Welcome

As Albertans, we have both the need and the capacity to develop innovative solutions to tackle our problems. By innovating, we can solve difficult problems even before they occur. If we postpone dealing with problems, they become worse and require more resources to fix. One way to get ahead of problems is to set up policies and programs that allocate resources now instead of waiting until they become more difficult and expensive to manage. This philosophy is at the heart of the work the Alberta Family Wellness Initiative (AFWI) has taken on.

The third annual Early Brain & Biological Development (EBBD) Symposium launched the final year of the AFWI's knowledge-mobilization strategy. The passion, commitment, and high calibre of the participants, both in the EBBD Symposia and the parallel Recovery from Addiction (RFA) Symposia, have been exceptional. Everyone involved has brought a wealth of knowledge, experience, and perspectives to this unique endeavour. During the Symposia and in the intervening months, participants have worked individually and together to improve the lives of children and their families in Alberta by applying what they've learned to what they do in their own spheres of professional activity and by finding new ways to collaborate and work more effectively. Our collective efforts are already bearing fruit: the expanding uptake of Symposia learnings in Alberta policy and practice shows clearly that the AFWI model is working. Change is happening. People are speaking the same language across disciplines and finding common ground. The gap between science and policy and practice is narrowing. As we celebrate these advances, we must also redouble our efforts. There is much work still to be done to address the obstacles we face on a day-to-day basis. I look forward to the merger of our twin initiatives into a unified strategy at our joint Symposium in Edmonton October 27 through November 1, 2013. Together we have a unique opportunity not only to shape the world we leave behind for future Albertans, but also to build a common good for all of Canada and perhaps the world beyond our borders.

Nancy Mannix, Chair & Patron, Norlien Foundation

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The Core Story of Early Child Development

IT ALL STARTS WITH **BRAIN ARCHITECTURE**. THE EARLY YEARS MATTER BECAUSE EARLY EXPERIENCES AFFECT THE ARCHITECTURE OF THE MATURING BRAIN. THE QUALITY OF THAT ARCHITECTURE ESTABLISHES THE FOUNDATION FOR ALL OF THE DEVELOPMENT AND BEHAVIOUR THAT FOLLOW. GETTING THINGS RIGHT THE FIRST TIME IS EASIER THAN TRYING TO FIX THEM LATER. THE BRAIN'S ARCHITECTURE IS COMPOSED OF SOCIAL, EMOTIONAL, AND COGNITIVE MATERIALS THAT GET BUILT TOGETHER AND CONNECTED. WHAT AFFECTS ONE, AFFECTS ALL.

The process by which the brain gets built is much like the **serve and return** of a tennis game. Young children instinctively reach out for interaction – through babbling, facial expressions, gestures, and cries – and adults respond. Serve and return works best with adults who are familiar to the child. If adults do not respond, the child's learning is interrupted and incomplete.

Children learn very early to pay attention by developing the **air traffic control system** in their brains. As the child learns to regulate the flow of his or her attention and to focus on tasks, he or she creates mental priorities. This mechanism – called **executive function** – needs to be geared up as early as possible. This can be done through innovative programs that give children opportunities to practise recognizing roles and sequences and joining in on cue, such as in play-acting or taking turns. This mental flexibility makes it easier to learn new information and use skills in new and complex situations throughout life.

What matters most, genes or environment? Environment counts as much as genes and can even influence how genes work. Our genes have instructions on them that tell our bodies how to work. However, the environment has to authorize the instructions. Positive experiences are **environmental signatures** that authorize instructions for positive outcomes. Negative experiences, such as exposure to violence or abuse, authorize instructions for negative outcomes. Because environmental signatures on a person's genes can last a lifetime, society needs to ensure that genes get positive environmental signatures early on.

What derails development? Stress is the bad guy in the story of child development, but we have a lot to say as a society about the power of the stress our children are exposed to. A **positive stress response** happens in situations like the first day with a new caregiver or receiving an immunization. It's a normal part of healthy development and is characterized by short increases in heart rate and hormone levels. **Tolerable stress** activates the body's alert systems to a greater degree as a result of more severe, longer-lasting difficulties, such as the loss of a loved one or a frightening injury. If the stress is time-limited and buffered by supportive relationships with adults, the brain and body recover from what might otherwise be damaging effects. A **toxic stress response** occurs when a child experiences strong, frequent, and/or prolonged adversity – such as physical or emotional abuse, chronic neglect, mental illness of a caregiver, exposure to violence, and/or chronic family economic hardship – without adequate adult support. Prolonged activation of the stress response systems can disrupt the development of brain architecture and other organ systems, and increase the risk for stress-related disease and cognitive impairment well into adulthood. Toxic stress literally gets built into the brain and the body. Society can work to prevent toxic stress responses in young children by reducing their exposure to extreme environments and by providing buffering relationships at school and in the community.

Like a faultline in the earth, brain faultlines can form in a number of ways. In some cases, they appear as the brain develops, or they can develop over time as people experience stress without supportive relationships. Also, people may have been born with brain faultlines. A faultline doesn't necessarily mean there will be an earthquake that causes a huge amount of damage. There are things we can do to help prevent faultlines from developing, and to minimize the chances that existing faultlines will turn into earthquakes. There are also things we can do once traumas or addictions have happened to prevent damage from happening again.

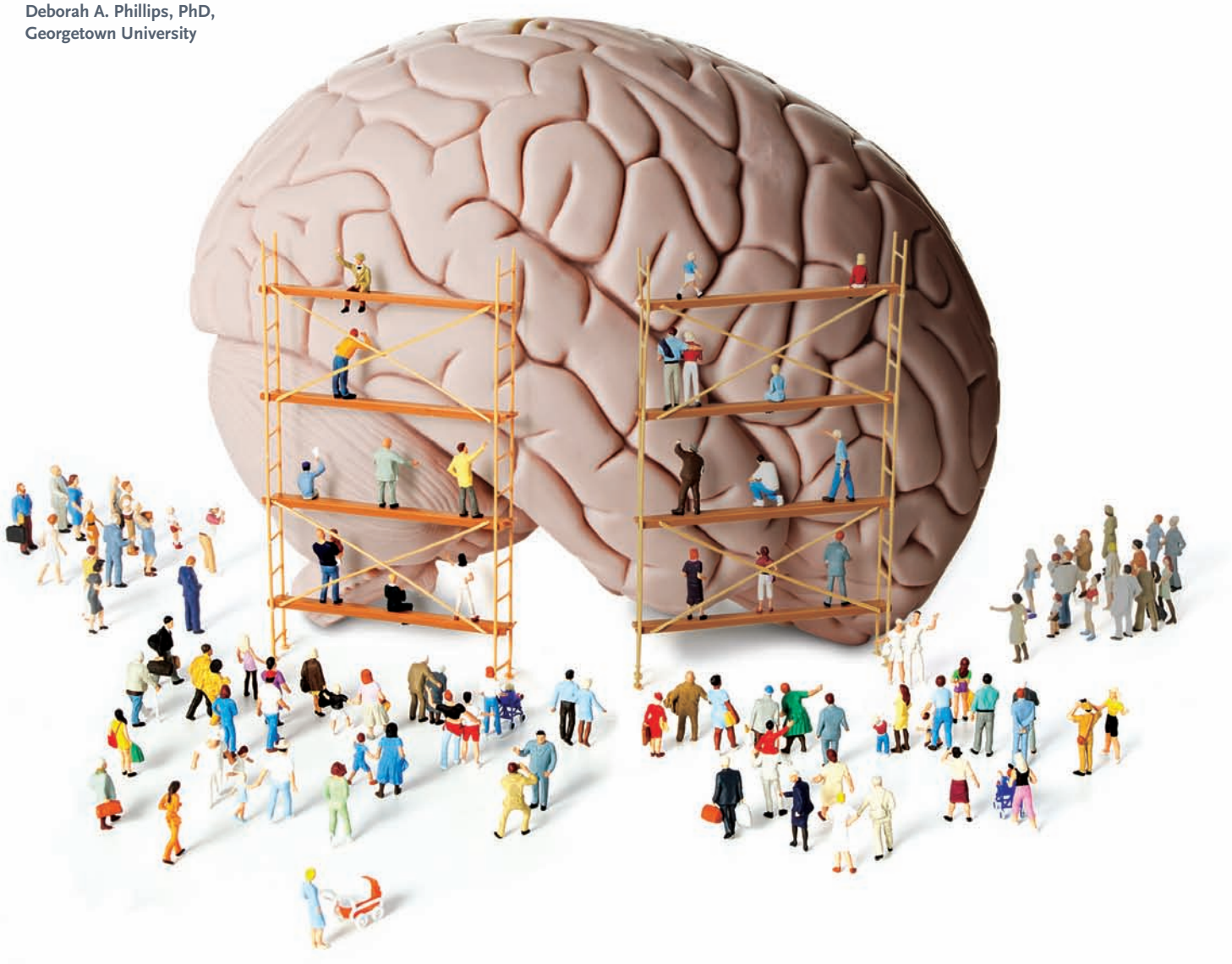
What can we do to protect children from harm? To prevent toxic stress and avoid triggering brain faultlines, society needs to focus on the child's ability to function at home and in the community. Promoting children's mental health is like using a sugar packet to level a table. The table can't function properly if it is on a slanted floor or if one of its legs is uneven. Similarly, children can't function fully if the environment in which

"I've been deeply impressed by the extent to which the Norlien Foundation and its partners have managed to take the scientific evidence and what we've learned about how to communicate science with the core story and really penetrate into the service system and the policy structures so that what you have in Alberta is a common language and a common platform upon which to make things better for children. It's remarkably impressive."

Deborah A. Phillips, PhD, Georgetown University

they grow is unstable. This affects their mental health and undermines their development. We have to provide assistance to steady the table's base. Whether it's by providing stability in foster care or making better-trained mental health professionals more available in very early care programs, interventions can help children achieve the levelness they need to grow a strong foundation.

Are all programs good for kids? It's not the time in the seat that counts – it's the quality of the child's experiences. How can we tap Alberta ingenuity to shape better environments for our children? We can measure the **effectiveness factors** that account for the difference between programs that work and those that don't work to support healthy development, and focus on making the good ones available to more people. This requires us to subject children's programs to scientific rigour, so that we can know what the effectiveness factors are.



The AFWI Model

NORLIEN FOUNDATION

Created in 1997, the Norlien Foundation is a proactive private foundation with offices in Calgary and Edmonton, AB. The Foundation is active in knowledge translation and transfer, applied research, evaluation, and networking. It has established partnerships with numerous national and international organizations working in the areas of childhood development, addiction, and mental health. The Foundation initiates strategic projects to enhance the quality of life for all Canadians, particularly those living in Alberta.

The Alberta Family Wellness Initiative (AFWI) funds and initiates a multitude of activities in early childhood development and addiction designed to drive change in policy and practice for the benefit of Alberta and its families. By supporting and promoting applied research, knowledge translation and dissemination, professional development and training, evaluation, and networking, the AFWI works to bridge the gap between what we know from science and what we do in policy and practice. Fundamental to this mission is providing the multi-disciplinary science, practice, and policy communities with a common language and framework of understanding based on the latest scientific knowledge about the effects of early childhood experiences on lifelong health and well-being, including addiction.

AFWI's three-year meta-strategy

To further this work, the AFWI developed a unique model for knowledge mobilization that recognizes the links between early childhood development, mental health, and addiction and the need for an interdisciplinary approach to bring about positive change in policy and practice. In 2010, the AFWI partnered with the Government of Alberta and Alberta Health Services (AHS) to launch twin three-year strategies, one in early brain and biological development and the other in recovery from addiction. After two years in action, the AFWI's meta-strategy is making an impact within Alberta and beyond.

The AFWI model calls for three annual Early Brain & Biological Development (EBBD) Symposia and three Recovery from Addiction (RFA) Symposia to be held, respectively, in spring and fall of each year from 2010 through 2012. Each Symposium series involves roughly 100 participants, who are invited back each year to build upon their experience and knowledge. Participants are change leaders selected for their unique capacity to influence research agendas, cross-ministerial collaboration, policy development, decision-making, professional development, training, program design, and practice. They also represent the broad impact of early childhood development, mental health, and addiction across society, from health and education to justice and human services.

ALBERTA FAMILY WELLNESS INITIATIVE

In 2007, the Norlien Foundation created the Alberta Family Wellness Initiative (AFWI). Based on a framework of epigenetics and developmental and behavioural neurosciences, the AFWI creates opportunities to better understand and apply scientific knowledge to factors influencing child development and its relationship to addiction and other mental health outcomes. It is hoped these efforts will encourage more informed decision-making to create, deliver, and fund a wide variety of appropriate services, programs, and policies that support healthy families in Alberta.

At the EBBD Symposia, participants receive the latest knowledge in early childhood and brain development, child mental health, and addiction delivered by leading scientists in their fields from across North America and beyond. In 2010, participants were organized into 13 small cross-disciplinary Learning Teams, each concentrating on a particular Focus Challenge, such as child mental health policy and practice or training and development for clinicians and professionals. Learning Teams meet daily during each five-day Symposium, set individual and group action goals, take learnings back to their own spheres of influence, and stay connected between Symposia.

Concurrently, the AFWI has supported the FrameWorks Institute to conduct research to uncover the values and cultural models underlying Albertans' knowledge and attitudes regarding early childhood and brain development, mental health, and addiction. FrameWorks is a non-profit organization that uses research from the social and cognitive sciences to translate or reframe scientific information for non-scientists. FrameWorks researchers share results from their Alberta research at the Symposia. They have also provided participants with hands-on workshops on framing the scientific knowledge into a common "core story" of early child development by teaching participants how to translate science into narrative components that have the documented potential to not only increase public understanding but also to provide a common framework of knowledge capable of informing policy and program decisions.

The EBBD and RFA strategies complement and build upon each other, reflecting the interconnectedness of Alberta's populations and the issues that affect them, from early childhood development to mental health and addiction. Together, they serve as an innovation platform to provide knowledge competencies and engagement that will build integrated capacities among researchers, policy makers, and practitioners. The strategies will merge in a combined Symposium October 28-November 1, 2013.

Already making an impact

Two EBBD and two RFA Symposia were held in 2010 and 2011. These first Symposia began a process for understanding the factors that contribute to healthy development, the factors that can derail development, and the implications of this knowledge for programs and policies in Alberta. Significant results were already evident within the first year, as participants reported that they were quickly able to connect what they learned to the areas of policy, services, research, and training they represent. Participant engagement has continued to develop and strengthen, making an impact throughout the system.

High-level policy outcomes

Within the first year of the AFWI strategy, the Government of Alberta produced two major policy documents incorporating key learnings from the science of early childhood and brain development. *Let's Talk About the Early Years,* a report by Alberta's Chief Medical Officer of Health, incorporated FrameWorks language and many key concepts from EBBD 2010, such as the far-reaching effects of toxic stress on brain architecture and function, the importance of the serve-and-return interaction that builds the brain through secure attachments between parent and infant, and the gene-environment interaction that directs our attention to the places and situations affecting very young children and underscores the need to invest more wisely in the early years.

Creating Connections: Alberta's Addiction and Mental Health Strategy, published in 2011, also strongly reflects learnings from the 2010 EBBD and RFA Symposia. Indeed, many EBBD and RFA participants were involved in the development of the Province's addiction and mental health strategy and action plan. The strategy adopts a family-based, more comprehensive approach to prevention and treatment that features enhanced prenatal and at-birth screening, ongoing parenting support, comprehensive care, a continuum-of-care model, chronic disease management for addiction, and improved access to quality addiction and mental health services within the primary health care environment – key concepts discussed at the Symposia.

Early adoption has also occurred at the national level. The Association of Faculties of Medicine of Canada has developed a series of 13 podcasts on brain development and addiction, designed for undergraduate medical education. The series is sponsored by the Norlien Foundation and is based on lectures from the AFWI.

Change happening throughout the system

By 2012, EBBD and RFA participants were reporting extensive changes happening at the policy, practice, and research levels throughout Alberta as a result of individual and group actions based on Symposia experiences and learnings. The core story of early child development, a research-based translation of the brain and developmental sciences, had proven powerful in uniting people both within and across fields. Resulting impacts include:

1. Policy: Efforts to integrate the core story of early brain and biological development in committee work, action plans, conferences, policy briefs, and external communications; and use of Symposia presentations for accredited workforce development within a policy setting.

"I think that what the Alberta Family Wellness Initiative is doing is absolutely remarkable. It should be replicated in other provinces and in other countries because it serves as an ideal model for dissemination of important scientific information and evidence-based practice that leads to the increased health and welfare of children, and that's incredibly important."

Nathan Fox, PhD,
University of Maryland College Park

2. Program development: Efforts to incorporate the Symposia learnings into websites for professional development; and development of workshops and other training built around the core story of early brain and biological development.

3. Research/academic: Presentations to other faculty members on the core story of early brain and biological development incorporating the FrameWorks language; integration of Symposia content into curriculum development discussions and courses offered; and use of the Symposia as a stepping stone to collaboration.

4. Practice: Efforts to train healthcare professionals in the core story of early brain and biological development; use of FrameWorks language and the core story with patients and families in care; and initiation of new projects that focus on a particular subject featured in Symposia content, such as toxic stress or maternal depression.

Some specific developments include:

- Use of the core story language and concepts in TeleHealth presentations for public health nurses, high school prevention programs for drug and alcohol use, nurse education programming (the AFWI website is also used in this context), and teaching health professionals in developing countries.
- Use of key concepts of the core story by Calgary Police Services, Alberta Health Services, Addiction Prevention and Treatment, and partners in the school system to develop projects that address vulnerabilities in youth and addiction issues.
- Analysis of how provisions and programs in provincial tax legislation could be used to provide better support for parents and more stable relationships.
- Use of the ACE (Adverse Childhood Experiences) questionnaire in some primary care settings.
- Collaboration between a neuroscientist and a family and community support services centre, creating the foundation for evidence-based intervention programs.
- Collaboration between the Health, Human Services, and Education departments at the deputy minister level on a cross-ministerial early childhood development strategy.
- Development of training vignettes for social workers using presentations from the 2010 EBBD Symposium.

"I've found it really exciting to see so many people talking with such a unified voice about changes they want to make for families and children and to see people at all levels of practice, policy, and research, and funders and government all coming together around that. I think it's a remarkable process."

Patricia Van Horn, JD, PhD,
University of California San Francisco

- Work with an EBBD presenter/expert on a Parenting After Separation pilot course.
- Workforce development learning modules created from EBBD Symposia videos, to be used for staff to earn social work credit.
- Biweekly meetings of AHS South Zone members, from front line to management, to look at connections between early brain development and addiction.
- Work plan developed to create a learning module on addiction for homecare managers, using the AFWI website resources.
- Integrated Justice Services Project, a partnership of Alberta Health Services (AHS) and Justice and Solicitor General, launched in Calgary to support individuals at high risk to reoffend. The program offers "one stop" assistance for employment, housing, addiction counselling, parole officer visits, and individual and family therapy.
- AHS clinics incorporating family-focused practices and strategies based on an RFA presenter's work.
- Development of a series of podcasts and other e-learning resources, by the Association of Faculties of Medicine of Canada and the Norlien Foundation, that synthesize research on early brain and biological development and addiction for undergraduate medical learners and educators.
- A new professional development curriculum – Provincial Concurrent Capable Learning Series (PCCLS) – incorporating concepts of long-term chronic disease management, particularly for individuals with concurrent disorders, drawn from presentations at RFA 2010. The second level of the series focuses on a continuous, evidence-informed, integrated treatment process and family involvement, again drawing on sources of evidence presented at RFA.

Executive Summary

"I've never seen a time when there's been so much interest in brain science, when researchers were so excited about the potential for their work to be impactful, where the economic climate has forced us to be more creative about how we spend our money. So this is really the opportune time to try to take this forward, and I think you guys are really at the forefront of this."

Philip Fisher, PhD,
University of Oregon

"I think the work you are doing is terrific. It provides opportunities not only within Alberta but for developing models that can be used in other settings.

William Beardslee, MD,
Harvard Medical School

The third and final Early Brain & Biological Development (EBBD) Symposium was held May 28-June 1, 2012, at The Banff Centre. In addition to stimulating scientific presentations by esteemed researchers from across North America, participants received an overview from Alberta leaders of progress that is being made locally in research, policy, and practice toward improving health and societal outcomes for Albertans.

Once again, the Symposium brought together more than 100 participants from diverse backgrounds, perspectives, and professions representing a wide range of public and private organizations in Alberta and across Canada. Most had been engaged with the EBBD initiative since 2010 and were returning for their third EBBD Symposium. Attendees this year also included interested observers from Canada and the United States. An introductory video featured a number of participants recounting their experiences over the preceding year incorporating learnings from the 2010 and 2011 Symposia into their work in a variety of settings. Some of their activities included:

- Developing a new undergraduate nursing course designed to bring these learnings into practice.
- Using core story concepts in building resources for parents.
- Examining tax relief options that would benefit children and families.
- Bringing awareness of the core story of early brain development into the criminal justice system, particularly in regard to young offenders.

New this year was a reception and poster session on the first evening where a number of participants showed how they are turning EBBD ideas into action. Their reports confirmed that EBBD is successfully engaging change leaders in knowledge mobilization toward evidence-based system transformation.

Morning plenary sessions featured expert presentations on current research in early brain and childhood development, with a focus on executive functioning and paternal/maternal depression; and highlights of related policy, programming, and research taking place in Alberta. Smaller afternoon sessions focused on understanding the science and its implications for policy and practice. Learning Teams were merged into larger Focus Teams and met throughout the week to work on group goals for applying the knowledge gained to their workplaces. On the final morning, the groups made presentations to a special guest panel of senior-level decision-makers from academic, government, and health-related sectors on how they planned to continue working together to further these goals in the future.

"What's striking to me about the Alberta Family Wellness Initiative is that it's a bet on people. By picking people who really have the potential, who are committed, and then making the investment represented by these three years of sessions, it's definitely a bet on people that's going to pay off."

Nathaniel Foote, MBA, JD,
Harvard Center on the Developing Child

Foundational Knowledge

The Symposium dialogue kicked off each day with presentations from the Faculty – 14 distinguished scientists, researchers, clinicians, policy developers, and change leaders from across the United States and from within the Alberta research, health, education, and human services system. Each day's plenary session focused on a different theme.

1. On the first day, Alberta policy developers and change leaders addressed how Alberta is bridging the science-policy-practice gap and how learnings from the first two EBBD Symposia are facilitating and driving the process.

2. Presenters on the second day talked about how early experiences affect development of executive function; interventions that have been shown to improve outcomes for children and adults; and how knowledge from brain science is being incorporated into Alberta's education system.

3. The third day focused on building cognitive, emotional, and social capacities. Presenters illustrated how conditions such as early interpersonal trauma or behaviourally inhibited temperament can negatively affect development in these areas and described evidence-based intervention strategies for mitigating these effects. A presentation from the Alberta perspective showed how science informs the wide range of maternal child programs across the province.

4. Scientific presentations on the fourth day looked at maternal depression and family systems, the impact of depression on adults' transition to parenthood and on families, and integrated evidence-based intervention approaches for children and their families. Participants received an overview of how Alberta's new Ministry of Human Services is developing an integrated social policy framework to achieve better outcomes for children and families. Drawing on lessons on innovation from industry, a final presentation offered a model for accelerating innovation to improve early childhood outcomes in Alberta.

"With this third Symposium, we are seeing evidence of the fact that people have not just begun to internalize the information and own it, they have fully internalized it and now they're at the stage of starting to take it out into their own communities and disseminate that knowledge even further."

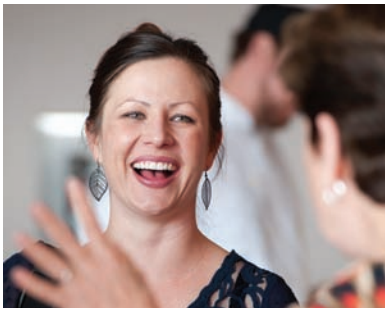
Glenda MacQueen, PhD, MD, FRCPC, University of Calgary

Implications for Policy and Practice

With the accumulation of scientific knowledge from three EBBD Symposia, it is clear that effective evidence-based screening tools and interventions exist. Moreover, many others show promise for identifying children and families at risk and for prevention and intervention leading to better outcomes. Equally clear is the momentum that now exists in Alberta to bring about system transformation. Participants focused their attention at this Symposium on how to move the science into policy and practice within Alberta's complex system.

To embrace a preventive approach, population health measures are needed, entailing more collection, analysis, and feedback of data. Change in policy is only part of the solution: true change requires understanding and buy-in at the front lines. Barriers to change must be addressed at the clinical level. Alberta's new Strategic Clinical Networks offer opportunities to meet this challenge.

Workforce development – both in professional training and professional development – is another major strategic direction for ensuring that change happens not only from the top down but from the bottom up. Given the importance of the early years and promising results from interventions focused on brain plasticity and executive functioning, more discussion of early learning and options for achieving positive outcomes for children at risk is needed. The prevalence, impact, and treatability of parental depression indicate the significant preventive potential of family-centred programs, interventions, and community supports. Changes in the system are needed to extend the focus of programming from the individual to the family. Many are already underway.



"What struck me about the work that the Norlien Foundation is doing is that it is so instrumental, both in creating a language across domains – because we have various domains interested in the success of children – and in creating the story, the metaphor, the analogy that works in the community so that we can all participate in the development of that story and understand that story in a way that's meaningful and relevant to us in our context."

Keray Henke, MA,
Senior Advisor, Alberta Education

Communicating the Science

The EBBD and RFA Symposia have made huge inroads into disseminating the core story of early childhood and brain development throughout the relevant policy and practice communities in Alberta and even beyond. Decision-makers, practitioners, and researchers across disciplines are increasingly using a common evidence-based language to talk about knowledge, issues, and challenges related to their common interest in this area. There was considerable talk about taking the core story of early childhood and brain development to the public square as the next step. The FrameWorks Institute has conducted extensive research to uncover the values and cultural models underlying Albertans' knowledge and attitudes regarding early childhood and brain development, mental health, and addiction. Participants heard about FrameWorks research in Alberta leading to development of a "brain faultlines" metaphor for discussing addiction, and linking addiction and early brain development in a more robust core story.

Resources

The AFWI website (http://www.albertafamilywellness.org/) provides a portal for accessing a wide range of resources on early brain and biological development, child mental health, and addiction geared specifically to researchers, healthcare professionals, front-line professionals, policy makers, and the general public. These include document and video libraries, learning modules, event listings, and information updates via e-mail, as well as video summaries of Symposia highlights and a collection of current Working Papers from the National Scientific Council on the Developing Child. The website is now being referenced as a resource in professional education and professional development curricula and is a continuing source of current information for all stakeholders.

Further Engagement

Focus Team members explored how to encourage new connections and support group members in individual and team efforts as they move forward beyond the Symposia. Members created Personal Action Strategies with timelines for actions they plan to take and goals they hope to achieve in the future using the knowledge, leadership, and connections they gained over the three years of the EBBD strategy. Participants will reconvene when the two AFWI strategies merge in a combined Symposium October 28-November 1, 2013.

Introduction

A hallmark of the Alberta Family Wellness Initiative's (AFWI) interdisciplinary knowledge-mobilization strategy is participant engagement. Participant activities in each of the three Symposia were designed to build powerful learning communities that can benefit the lives of children and their families in Alberta now and in the future. Participants have had the opportunity to explore cutting-edge research, share their expertise, and engage in activities that will encourage new ways of communicating and working together across their varied disciplines.

The 2010 EBBD Symposium focused on laying the foundation for a common understanding of the core story of early brain and biological development and communicating the core story consistently to unify disciplines around a common framework for action. The 2011 Symposium centred on applying the core story in policy and practice. The 2012 Symposium delved into specific topics in child development that have received increasing attention in recent years and provided an orientation to recently released policy frameworks for Alberta's child health, addiction and mental health, and education systems.

The exceptional 80% return rate of participants throughout the initiative confirms that engagement has occurred. Participants' commitment, enthusiasm, and efforts to date confirm the strategy is working. The key messages are penetrating and taking hold: 1) Early childhood matters, enormously; 2) The foundation for healthy development depends on stable, responsive relationships with adult caregivers in a safe, supportive environment; 3) These factors depend upon the capacities of parents, caregivers, and communities; and 4) Every policy domain that affects how people live plays a role in the healthy development of children.

The work has only just begun, but the energy and ideas generated at the 2012 EBBD Symposium inspire confidence that these efforts will continue to penetrate and make a difference in the lives of Albertans for generations to come.

PART 1

FOCUS CHALLENGES FOR FOCUS TEAMS

Focus Team 1: Research Priorities

Focus Team 2: Co-ordination of Education, Justice, Health, and Human Services

Focus Team 3: Collaboration Between Academia and Policy and Practice

Focus Team 4: Child Mental Health Policy and Practice

Focus Team 5: Child and Family Primary Care Practice

Focus Team 6: Training and Development for Clinicians and Professionals

The Symposium Experience

The 2012 Early Brain & Biological Development (EBBD) Symposium continued the engagement of a diverse group of participants into their third year with the Alberta Family Wellness Initiative (AFWI) strategy. The Symposium was designed to build on the knowledge gained in 2010 and 2011; identify and exploit opportunities for application in science, policy, and practice; and set the foundation to move forward with a shared knowledge base as a multi-disciplinary community of purpose.

2012 Symposium Objectives

Key objectives of the 2012 EBBD Symposium were to:

- Understand the role of executive function and temperament in healthy child development, and how these affect the child-caregiver interaction and can in some cases further contribute to derailed development.
- Explore interventions in executive function and temperament for both children and parents that can improve the parent-child interaction.
- Understand the contribution of maternal depression to derailed brain development and explore interventions that support positive maternal mental health.
- Explore Alberta's new policy frameworks and identify opportunities to integrate and apply knowledge within organizations and systems to generate awareness and support change.
- Encourage dialogue within a multi-disciplinary community to develop and support innovative approaches to research, policy, and practice in early brain and biological development.

The Learning Process

Each day of the Symposium was organized around a theme corresponding to key areas of research in science, practice, and policy. Presentations and discussion took place in a variety of group settings throughout the week.

DAILY CONTENT THEMES

Day 1
Bridging the Science-Policy-Practice Gap

Day 2
Early Experiences and the Development of Executive Function

Day 3
Building Cognitive, Emotional, and Social Capacities

Day 4
Maternal Depression and Family Systems

Day 5
Where Science Meets Real Life

Plenary Sessions

Plenary sessions set off the learning process each day with presentations of leading-edge research and evidence-based interventions related to this year's focus on executive function and temperament, and maternal depression. Plenary sessions also included overviews of Alberta's new policy frameworks in areas related to early brain and biological development: addiction and mental health, human services, and education. Participants had opportunities to engage with presenters in question-and-answer dialogue leading into smaller group discussions scheduled for each afternoon.

Participant Workshops

On the first afternoon, four concurrent workshops were presented by EBBD participants. These included a discussion of the challenges involved in spreading information from the EBBD Symposia to physicians and front-line staff of Primary Care Networks and strategies for meeting them; an overview of how key messages from EBBD Symposia have been integrated into evidence-based practice in a regional community-based mental health service for infants and preschoolers; a demonstration of successful methods of transferring new knowledge related to addiction and mental health, using an evaluated project involving training correctional officers; and a preview of a podcast on brain architecture and development, part of a new series of resources that synthesize research on early brain and biological development and addiction for undergraduate medical learners and educators.

Reception and Poster Session

New this year was a poster session and reception preceding the networking dinner on the first evening of the Symposium. Twelve participants took the opportunity to share information on projects they are working on, including: activities and plans for knowledge translation at NeuroDevNet, a national network on early brain development; a description of the Early Development Instrument (EDI) being used in Alberta as part of the Early Child Development Mapping Initiative; and the Grandmother Wisdom project, which offers parenting advice that combines science and tradition in Aboriginal communities.

Faculty Workshops

On the second and third afternoons, Faculty provided participants with the opportunity to delve deeper into content presented in the plenary sessions. Faculty workshops included discussions on: building executive function through brief family- and classroom-based interventions; Washington State's initiative to create a "one science" approach to policy making, aligning the work of multiple agencies that serve young children and their families and based on emerging research in early child and brain development; novel and innovative methods for identification and treatment of anxiety disorders; using relationships as an essential aid to recovery from the impact of trauma in infancy and early childhood; and families' experiences of depression and recovery, and the availability of effective preventive intervention strategies.

Interdisciplinary Cohort Discussions

Each afternoon, participants connected in smaller, facilitated interdisciplinary groups of their peers in science, policy, and practice. Cohorts discussed the new information from the morning's plenary presentations, explored opportunities to apply the knowledge in the Alberta context, and discussed potential challenges involved in application.

Focus Team Sessions

Originally, in 2010, participants were organized into 13 Learning Teams tasked with discussion, planning, and ongoing collaboration regarding particular areas of interest with respect to translating knowledge from the Symposia into research, policy, and practice in Alberta. In order to further the development of networks and collaboration, the Learning Teams that shared the same Focus Area were merged in 2012 to form six Focus Teams. The teams met daily throughout the week to identify strengths and weaknesses in current research, policy frameworks, and practice arenas in Alberta as they relate to the EBBD Symposia, and generate ideas and recommendations to overcome barriers and enhance the lives of children and families in Alberta.

GUEST PANEL REPRESENTATIVES

Kathy Aitchison
Professor and Centennial Chair in Health and Addictions
University of Alberta

Lesley Brown
Associate Vice President of Research
University of Lethbridge

Jonathan Denis
Minister
Justice and Solicitor General
Government of Alberta

Greg Eberhart
Registrar
Alberta College of Pharmacists

Nathaniel Foote
Managing Director and Senior Fellow
Harvard Center on the Developing Child
TruePoint and Harvard University

Cy Frank
Vice President, Research Strategy
Alberta Health Services

Richard Hawkes
Senior Associate Dean (Research)
Faculty of Medicine
University of Calgary

David Hodgins
Professor, Head of Psychology
University of Calgary

Don Johnson
Board Member
Alberta Health Services

James Kehrer
Dean of Pharmacy
University of Alberta

Lory Liang
Interim Dean and Professor of Public Health
University of Alberta

Stephen Lockwood
Board Member
Alberta Health Services

Learning Team Presentations

The Symposium concluded on the morning of the final day with brief presentations by the Focus Teams to the full Symposium audience and a special guest panel of high-level academic, policy, and government leaders in Alberta. Each team talked briefly about what its members were doing, what needs to be done, and what can be done to better integrate the science, policy, and practice communities in Alberta around early brain and biological development, and presented its plan for moving forward. Recommendations included: increased opportunities for pre-school and earlier education, especially for at-risk children; universal depression screening; changes to funding and compensation models; incorporation of evaluation into program planning at the start; and embedding the core story of early childhood and brain development into all child- and family-centred programs as well as professional education and professional development curricula.

Participants and Observers

Among the 98 active participants, 80% were reconvening for their third EBBD Symposium, representing an extraordinary retention rate for the strategy as a whole. In addition, several observers were present from across Canada and the United States.

The participants came from varied backgrounds, perspectives, and professions, including many from Government of Alberta ministries, Alberta Health Services, and Alberta's research-intensive universities. They included policy makers, program developers, members of the judicial system, health practitioners, clinicians, researchers, psychiatric residents in training, educators, students, advocates, funders, and representatives of professional bodies and organizations. (See Appendix 3 for a list of participants by Focus Teams.)

A large majority of the participants have remained engaged in the three-year initiative since its beginning in 2010. Between Symposia, they continue to communicate with their fellow team members and take advantage of additional mid-year learning opportunities. Their employers have agreed to support the initiative by incorporating these activities into the participants' job responsibilities.

GUEST PANEL REPRESENTATIVES (CONTINUED)

Ed McCauley
Vice President of Research
University of Calgary

Kevin McQuillan
Dean of Arts
University of Calgary

Roger Moses
President
Psychologists' Association of Alberta

James Radner
Assistant Professor
School of Public Policy and Governance
University of Toronto

Dave Rodney
Associate Minister of Wellness
Government of Alberta

Kurt Sandstrom
Assistant Deputy Minister
Safe Communities and Strategic Policy
Government of Alberta

Jackie Sieppert
Dean of Social Work
University of Calgary

Eldon Smith
Board Member
Alberta Health Services

John Thomson
Senior Policy Manager
Executive Branch
Government of Alberta

Heather Toporowski
Vice President
Program and Performance
North Zone, Alberta Health Services

Bill Weary
Deputy Minister
Aboriginal Relations
Government of Alberta

Symposium Host Environment

The Symposium was held at The Banff Centre, located in Banff National Park. Participants stayed at the Centre's on-site hotel. The Banff Centre is a public, board-governed, specialized arts and culture institution providing non-parchment programs in the arts and creativity, and in leadership development, mountain culture, and the environment.

Symposium Sponsors

The 2012 EBBD Symposium was made possible by the following private- and public-sector sponsors:

- Norlien Foundation
- Government of Alberta
- Alberta Health Services
- University of Alberta
- University of Calgary
- University of Lethbridge
- Hotchkiss Brain Institute
- Alberta Children's Hospital
- Women & Children's Health Research Institute
- Alberta Innovates Health Solutions
- TransCanada Corporation

Symposium Development and Management

The Symposium involved a number of dedicated people in its development, planning, and delivery. See Appendix 1 for a complete list of the various committees and their members and the Norlien Foundation staff who supported this event.

PART 2

Foundational Knowledge

Plenary presentations at the third Early Brain & Biological Development (EBBD) Symposium focused on specific topics within the core story of early brain and child development – executive functioning and paternal/maternal depression – and related research, policy, and programming taking place in Alberta.

The Foundational Science

Symposium Faculty presentations highlighted research and promising evidence-based interventions in key areas of early brain development related to executive functioning, behavioural inhibition, parental depression, and child-parent interaction. Predictable, safe early environments that include strong serve-and-return interaction with caregivers and are free of toxic stress promote healthy brain development. Stressful environments that impair circuits in the developing brain affecting responses to fear and threat are highly detrimental to emerging executive function capacities. Evidence of brain plasticity in the protracted development of the prefrontal cortex, on which executive functioning depends, has led to the development of interventions and strategies that have improved outcomes for children and adults, including children with behavioural inhibition and children in foster care, adopted children, and others who have experienced abuse, neglect, and trauma. Depression and its effects on parenting were also featured as an area in which a range of effective and potentially effective preventive and treatment interventions have been developed.

Abstract:

Interventions in Executive Functioning

By Deborah A. Phillips, PhD

Executive functioning (EF) is important for all facets of life. Executive functioning is the air traffic control system of the brain, governing the ability to execute deliberate, goal-directed, planful behaviour.

Competent EF encompasses working memory, inhibitory control, and mental flexibility. Inhibitory control enables us to pause and think before we act; working memory enables us to hold and manipulate information in our heads over a short period of time; mental flexibility gives us the capacity to cope successfully with changing circumstances, to catch our mistakes and fix them.

These skills provide the biological foundation of school readiness and social competence in the early years and underpin adult capacities to be responsible citizens, dependable parents, and focused, flexible workers. EF deficits play a prominent role in many disorders including ADHD, conduct disorders, and addiction. These deficits are often misread by parents and teachers as signs of intellectual insufficiency or willful misbehaviour, setting off cycles of attributions, expectations, and behaviours that further disadvantage children with poor EF skills. New interventions show that EF skills can be taught and improved in children and adults.

Development of executive functioning. Individual differences in EF are due to interactions between genes and environment, including the environment of relationships in which the child's brain develops. Brain architecture needs to be built in an orderly sequence to provide a sturdy foundation for advanced cognitive, emotional, and social skills. During initial stages, the brain develops more extensive neural connections than it needs; unused connections are pruned away over time. The development of EF traces the dramatic increases and pruning of neurons in the prefrontal cortex, showing a rapid upturn between the ages of 3 and 5, and another uptick between ages 12 and 25. These are periods when the brain is especially open to influences, when development can go off track, and when interventions can make a big difference. Evidence shows that sensitive, responsive, consistent caregiving that provides a predictable, minimally stressful, nurturing environment in the early years supports the development of EF. Toxic stress that leaves the child's stress response system in a constant state of arousal derails EF development.

Poor EF skills have potentially damaging lifelong consequences. EF skills are basic to critical early behaviours such as following multi-step instructions, taking turns, and role playing. Children struggling with these skills are often labelled as disobedient or poor students when what they really need is help with EF. Missing this opportunity for remediation can have detrimental outcomes. The New Zealand Dunedin Multidisciplinary Health and Development Study showed that children who performed poorly in tasks requiring inhibitory control were at greater risk for poor physical health, drug dependence, criminal convictions, and lower socio-economic status at age 32.

Serve-and-return interaction scaffolds developing EF skills. A child's most profoundly influential experiences are based on a continuous serve-and-return interaction with one or more adults. Research suggests that a key ingredient of this interaction is attention-directing behaviour in which the adult engages in activities that focus a child's attention on something the child finds interesting and helps the child stay focused in the face of distractions. This joint attention activity scaffolds early development of EF skills. As the child gets older, scaffolding involves more complicated activities, such as games like Simon Says for developing inhibitory control, or dramatic play that helps the child practise mental flexibility.

EF skills are plastic. Even if a child's EF is off course during the preschool years, it is not too late for remediation. The protracted development of EF skills means they can be learned. An Oklahoma study compared children a day apart in age, half of them having taken part in Oklahoma's very high-quality universal preschool program and the other half just starting the program. The first group was rated significantly higher by teachers on attentiveness in the classroom, which involves all three components of EF. The children who had completed the high-quality program also rated higher on several measures of child engagement than their counterparts in seven other states whose programs are considered good but not up to the same level as the Oklahoma program. The researchers concluded that high-quality instruction can foster EF skills, making a good case for upgrading preschool education.

EF curricula. A growing number of classroom curricula are emerging that provide children with opportunities to enhance their EF capacities. One type of program trains teachers in behaviour management to provide predictable, organized, safe environments that allow children to acquire EF skills. Others, such as Tools of the Mind, provide children with structured opportunities to practice EF skills. The active ingredients of this program include:

- Exercises are embedded in activities and instruction throughout the day.
- Children are engaged in motivated, goal-directed activities.
- Planning and reflection are required.
- Teachers gradually remove scaffolding and increase difficulty of tasks.
- Children have ample opportunities to practise.
- Program is delivered in well-organized, low-stress environments.

"I would like everybody who touches the life of a child to understand these notions of executive functioning and to understand how important they are, because I think people make a lot of mistakes and judge children incorrectly and unfairly. This sets children along a path that they just don't need to go down. It's heartbreaking because it's through no fault of their own." **Deborah A. Phillips, PhD**

Abstract:

Applying knowledge about how stress affects the developing brain to improving outcomes for adopted, foster, and other maltreated children

By Philip Fisher, PhD

Social policy towards maltreated children has not fully kept pace with emerging knowledge in early brain development. Specific types of toxic stress, such as neglect and placement stability, commonly occur among children in foster care, adopted children, and other maltreated children. Toxic stress disrupts the development of key stress regulatory brain systems and negatively impacts the development of executive functioning. Evidence-based strategies can leverage the brain's plasticity and reduce exposure to toxic stressors in this population to improve outcomes.

Research is allowing us to understand the needs of children in foster care in ways never before possible. Preschool-age foster children lag behind their peers on measures of general intelligence, language, emotion, understanding, and physical development. Early toxic stress also impacts their basic biological systems. In most individuals, the stress hormone cortisol peaks in the morning and decreases rapidly over the day, but foster children show a blunted pattern in this system that is particularly associated with early neglect, or absence of the critical serve-and-return component of early development. Foster children also show diminished brain activity in response to corrective feedback after a mistake. Responsiveness to corrective feedback is germane to executive functioning, and lack of this characteristic often leads to children being labelled disobedient.

Positive intervention is possible. Many foster children function at above-average levels, meaning intervention is not needed for every foster or maltreated child. For those negatively affected by toxic stress, the brain shows considerable plasticity, and the right kinds of intervention can make a big difference. In rodent studies, early enrichment appears to improve functioning to more typical levels in pups exposed to early stress. Early intervention remediates early adversity in primate studies and also appears to work with children adopted from institutions overseas. Interventions providing enriched environments for maltreated foster children have shown the emergence of a typical daily rhythm in cortisol levels concordant with positive behaviour change. A study comparing children in regular foster care and those receiving intervention showed a shift toward typical levels of electrical brain activity in response to corrective feedback in the intervention group.

We can be increasingly precise about who is at risk and how to help them. One thing that is most highly associated with poor executive function in foster children is the amount of instability in their lives and the number of times they have moved. To keep kids from going off track we need to reduce instability and make sure that children stay in their placement homes. Our studies have shown it is possible, using the most basic data, to determine which children are going to bounce around a lot, and we can intervene to prevent it. We asked caregivers, in a brief telephone interview, which problems on a list occurred in the preceding 24 hours and whether or not they were stressful. We found that beyond six problem behaviours per day, the likelihood that the placement would fail increased dramatically. Armed with that information, caseworkers can intervene early with supportive programs. Interventions can also prevent reunification failures and adoption failures following foster care. The current statistics are grim. With one prior placement, 90% of permanent placements succeed; with four prior placements, there is only a 50% chance of success. As supportive programs tried in Oregon have shown, by giving the children and the foster parents the support they need, by carefully managing the transition, and by giving the permanent placement caregivers the support they need, it is possible to completely mitigate the risk. There is no excuse not to do it.

Preventing toxic stress and mitigating its effects in young foster children is financially feasible. We estimate the costs in staffing and additional support for this kind of program over nine months would total slightly over $6,000 per child, and not all children would need this high level of support. In contrast, total costs over time for children who are bouncing around in the regular system – including caseworker time, extra therapy, and other system costs – come to just under $30,000. It is where you spend the money that makes the difference. This is where policy comes in.

Multi-level involvement and commitment are essential to realize the full potential for change. From a researcher's perspective, translation of scientific knowledge isn't easy. Similarly, from a policy perspective, it has been hard to access the knowledge that exists because it has been sequestered in specialized ways of talking. We need to tear down the silos that have traditionally existed in order for change to occur. Real change happens from public-private partnerships, from people at all levels coming together and working toward a common purpose. The time is now as it has never been before to try to take this forward.

"We know increasingly how things got off track for children in foster care and the child welfare system. And we're beginning to learn what can be done to set things right. It's really about the confluence of practice and policy. It's about taking the brain science and moving it into informing not only the interventions that we do but also the kinds of policies that we make for these vulnerable children where we think the greatest impact is likely to occur." **Philip Fisher, PhD**

Abstract:

FROM BENCH TO BEDSIDE: WHAT WE LEARNED ABOUT TEMPERAMENT AND ANXIETY AND HOW WE HAVE APPLIED THAT TO INTERVENTION

By Nathan Fox, PhD

Children characterized with behavioural inhibition are at risk for developing anxiety disorders. Behavioural inhibition is a temperament that can be identified in infancy and early childhood. Some children persist with this temperament and develop anxiety disorders and others do not. Two cognitive processes appear to moderate behavioural inhibition over time: attention to threat and error monitoring. Studies of these processes have led to the development of novel interventions for reduction of anxiety symptoms and the possibility of using this approach to treat pediatric anxiety.

Behaviourally inhibited children show a heightened vigilance and attention to novelty from their earliest months. They are quiet and watchful, retreat from unfamiliarity, and often refuse to engage in interaction. Many show low self-esteem, have poor peer relationships, and are victims of bullying. Physiologically, they show elevated morning levels of the stress hormone cortisol, elevated autonomic reactivity, and enhanced startle responses. Over one-third of children who display behavioural inhibition discontinue this temperament over time. A longitudinal study of children from infancy found that those who display continuous behavioural inhibition over childhood and through adolescence are more likely to display a higher lifetime incidence of psychiatric disorders, in particular anxiety disorders.

Brain imaging shows heightened amygdala activation as the mechanism underlying behavioural inhibition. What are the mechanisms responsible for the continuity or discontinuity of this temperament over time? Two mechanisms have been identified. Cognitive control, or error monitoring, was assessed using a Flanker task with the study cohort during adolescence. The subject sees arrows on a screen; when a red dot appears over one arrow, the subject must press a button indicating the arrow's direction. In some cases the arrows all point in the same direction; in others they point in different directions. The task measures both reaction time and post-error slowing (reaction time after a mistake is made), and a brain response called error-related negativity (ERN), which occurs before a person realizes he or she has made a mistake. Behaviourally inhibited children showed more post-error slowing compared to non-inhibited children, meaning they were monitoring their own behaviour more, and their ERN measures showed greater brain response. The researchers are collecting Flanker data on a second cohort of nine-year-olds to see whether ERN predicts which children go on in adolescence to develop social anxiety.

Attention bias to threat is the second mechanism identified in relation to temperament. The evidence is overwhelming that adults and children with anxiety display attention bias to threat. The researchers used a Dot Probe task with their adolescent cohort to assess whether subjects showed greater attention to threat than not. The subject first gets a cue, and then sees an arrow on a screen. The person presses one button if the arrow is pointing up and another if it is going down. Between the cue and the target, two faces briefly appear: one neutral and one threatening. Persons with anxiety disorders show a faster reaction time when the arrow is congruent with the threatening face and a slower time when the arrow is not congruent, which means they are attending to the threatening face. Studies of the neural basis of this task show that the amygdala is involved in the immediate attention to threat, while the ventrolateral cortex is involved in down-regulating this response. Behaviourally inhibited adolescents given this task showed a greater attention bias to threat compared to non-inhibited children, with the magnitude of threat bias associated with greater anxiety symptoms. This pattern was replicated with the younger cohort.

Is there a causal link between development of attention bias and anxiety? Cognitive psychologist Colin MacLeod conducted randomized trials with non-anxious subjects in which half received a typical Dot Probe task and the other half received a Dot Probe showing the arrow always behind the angry face. In a subsequent stress-induction task, the second group, who were essentially trained to develop a bias to threat, showed greater anxiety, suggesting a possible causal link.

How can this information be used to design interventions? Adult studies in training attention away from threat have shown success in reducing anxiety symptoms. The presenter's research group reversed the MacLeod study design, using the same Dot Probe task on children but putting the arrow always behind the neutral face to train subjects' attention away from threat. They are also monitoring the neural mechanisms to see whether the brain is being trained at the same time. One study involving children with social anxiety has shown a significant reduction in anxiety symptoms after a four-week period of training twice a week. Questions remain as to how many training trials are necessary and whether or not they can be administered to people in their homes by computer. More attention-training studies involving children with anxiety disorders are needed. These studies should include contrasts with current available therapies, such as pharmacology and cognitive behaviour therapy.

"One of the interesting things about attention is that it is a fundamental mechanism that is perturbed in many psychiatric disorders and it also happens to be a fundamental mechanism that is perturbed in substance use. Colleagues of mine are now using the attention bias modification procedure that we have developed for adolescents and adults with substance use disorders." **Nathan Fox, PhD**

Abstract:

CHILD-PARENT PSYCHOTHERAPY WITH TRAUMATIZED YOUNG CHILDREN

By Patricia Van Horn, JD, PhD

Everyone has a core story that governs how they feel about themselves and others. Core stories grow out of serve-and-return interactions in a child's early relationships and can be altered by toxic stress in ways that can be devastating to the child's development. A baby who is well cared for will develop a positive core story in which he or she feels important, loved, and protected. A child who experiences toxic stressors, such as neglect, parental abandonment, or violence, will have a narrative in which he or she may feel unimportant, unprotected, and constantly under threat.

Affect dysregulation hampers executive function. When a parent and child with negative core stories try to make a relationship with each other, they will not do well. As the parent plays out his or her internal drama, there may be no effective serve and return with the child. The child no longer sees the parent as protector and is left with contradictory emotions and traumatic expectations of the world. Physiologically, the child's over-activated stress response system hampers executive functioning – including the ability to put cognitive reflection and control between feelings and behaviour – and puts the child's development at risk.

Child-Parent Psychotherapy (CPP) is an evidence-based intervention for traumatized children under age five and their caregivers. The primary goal of CPP is to support and strengthen the relationship between a child and his or her caregiver as a vehicle for restoring the child to a positive developmental trajectory. The patient is the child, but the interventions are carried out through the relationship. Primarily a psychodynamic intervention, CPP draws upon many theories, including developmental theory, attachment theory, and trauma theory, as well as principles from social learning and cognitive behavioural therapy. Three main principles underlie CPP. First, the attachment system is the main organizer of children's responses to danger and safety during the first five years. Second, emotional and behavioural problems in early childhood are best addressed in the context of the child's caregiver relationship. Third, promoting growth in the caregiver-child relationship supports healthy development in the child long after the intervention ends.

CPP starts by focusing on growth-promoting experiences in the present. Interventions that promote a good present tense for the child and parent help them restore trust in each other and pleasure in each other's company. These interventions provide the kind of new experiences that can change the wiring of the still-plastic early brain. CPP intervention acknowledges the experience of toxic stress in the child's life and makes it possible for him or her to talk about it and process it. It is very important that the child understand that he or she is not to blame for what happened. The ultimate goal, once the parent and child can both tolerate the narrative of the trauma, is to help them build jointly a new story of what happened to them that attaches a different meaning to the trauma.

Restoring reciprocity in the relationship is at the heart of CPP. The therapeutic objectives of CPP are those of all therapies, including affect regulation, understanding the meaning of behaviour, normalization of traumatic response, and continuity of daily living. Of particular importance is restoring reciprocity in the relationship. A core story designed to protect a person from threat doesn't allow a parent to reflect upon the child's needs or the child to think about the parent's motivations. A new jointly designed core story restores that essential reciprocity. Ports of entry for intervention are not predetermined but are chosen by the clinician in the moment based on the goals the family has set for itself.

Evidence from five randomized trials of CPP in two different labs shows significant positive results. A study involving anxiously attached, multiply stressed Latino women and their 12-month-old children showed an increase in attachment security for the group that received CPP and essentially no difference between the intervention group and securely attached controls. A study involving intervention with toddlers of depressed mothers again showed significant gains in attachment security in the intervention group. In a randomized trial involving maltreated preschoolers in the child protection system, those who received CPP showed fewer negative representations of their mothers and of themselves in a story-telling task than those receiving other therapies; in fact they performed much like non-maltreated controls. An intervention with maltreated infants also showed significant increases in secure attachment. A fifth study, of preschoolers exposed to domestic violence, showed decreased behaviour problems and dramatically decreased post-traumatic stress disorder (PTSD) symptoms in the children compared to those in community standard treatment. It also showed dramatic decreases in PTSD symptoms and in general distress in their mothers. Six months after treatment, both children and mothers in the CPP group continued to improve – evidence that if you strengthen the parent-child relationship, there is a good chance that it will continue to sustain the child's development long after the intervention ends.

"Child-Parent Psychotherapy is an intervention that, when it works well, helps the parent and the child adjust both their individual narratives and their relational narrative in such a way that the child is free and the parent is free to develop better." **Patricia Van Horn, JD, PhD**

Abstract:

THE IMPACT OF MATERNAL DEPRESSION ON THE TRANSITION TO PARENTHOOD

By Linda Mayes, MD

Transition to parenthood is a key adult developmental stage. Becoming a parent involves the adaptation of psychological and neural systems toward the care of another. Depression may impact this transition by interfering with functions necessary to parenthood, such as sensitivity to infant cues and ability to interpret infants' needs. Focusing attention on how adults make this developmental transition, in addition to how adults' caring impacts child outcomes, expands the range of potentially effective interventions for children and their families.

Transition to parenthood involves key changes in mental economy, perceptual sensitivity, and neural reward and stress systems. Studies show consistent differences between parents and non-parents in these areas during the first months postpartum. Attentional focus turns to preoccupation with the baby. Mothers show an enhanced sensitivity to sound compared to non-mothers and an activation of the brain's reward circuits at the sight of their own happy infants. Mothers also respond differently than non-mothers to high-distress baby cries with activation in regions of the brain involved in planning motor response. Individual differences in these neural shifts are measurable and may be attributable to sources such as depression, attachment security, and substance use.

Maternal depression is particularly relevant to early childhood development. Depression is very prevalent (15-25% in adults) and extremely debilitating, with relapse rates up to 80% and a high risk for intergenerational transmission. For low-income women with young children, the prevalence may be as high as 40%. While postpartum blues is common and passing, postpartum depression may turn into a chronic disorder. Risk factors include childhood adversity as well as social factors such as poverty, absence of social supports, and high levels of chronic stress. Postpartum depression rates as one of the highest sources of toxic stress in young children and is associated with adverse outcomes in offspring, including poorer cognitive and social skills.

Altered cognition of depression impacts parenting. Clinical features of maternal depression include difficulty concentrating, greater distractibility, increased negative attribution, difficulty making decisions, and greater emotional lability and sensitivity to stress. Infants are perceived to be more bothersome. There may be feelings of guilt, resentment, and ambivalence toward the infant and an increased risk for abuse of the child. The mother takes longer to respond to the infant's cries and lacks awareness of the infant's cues. In terms of attachment theory, an infant's signal of distress or fear activates a cycle in which the caregiver recognizes the infant's distress and at the same time understands and down-regulates his or her own resulting distress. This mentalization – the ability to think about others and oneself in terms of mental states – is very important to parental behaviour. The two components of mentalization – signal detection and the ability to think about what it means – occur in two different sections of the brain. Parental depression dampens the signal-detection circuitry, impacting the parent's ability to see the baby's distress. Early deprivation or neglect may also cause a parent's heightened stress reactivity and impair the parent's ability to interpret the infant's needs and his or her own emotional response, for example by seeing the baby as unresponsive or rejecting. When depression disrupts the mentalization process in this way, the parent's response is to get carried away by his or her own distress and to turn away from the infant.

Interventions with depressed mothers need to focus on parental mentalization. Impairments and distortions in mentalizing both cause and result in depression. They exacerbate symptoms and need to be addressed early. Intervention must focus on the needs of the parent, how the demands of caring for an infant are stressful, and how the parent perceives and experiences that stress. This approach makes depression an object the parent can reflect upon and focuses on increasing the adult's distress tolerance, capacity to maintain decision-making in the face of stress, and ability to remain mindful of his or her own and the child's emotional states. Work with the mother as parent must be combined with parent-child work to address the mother's representations about the baby and her understanding of what the baby is conveying to her. Most important, integration of services for adults as parents with services for their children offers the opportunity to impact multiple generations and especially the parenting by those children when they are adults.

"There's been decades of work on the impact of parental care on child health and development, but there's also a tremendous amount of work needed on how becoming a parent actually impacts adult development. The emerging science on transition to parenthood is rethinking parenting by asking how this transition impacts adults' psychological and neuropsychological development." **Linda Mayes, MD**

Abstract:

HOPE, MEANING AND CONTINUITY: LESSONS LEARNED IN THE DEVELOPMENT AND IMPLEMENTATION OF PREVENTIVE INTERVENTIONS FOR MATERNAL DEPRESSION

By William Beardslee, MD

An increasingly strong evidence base exists for mental health promotion and prevention for children and families. Two recent reports of the Institute of Medicine outline major advances in this area: one dealing with the prevention of mental, emotional, and behavioural problems in children and families, and the other focusing on parental depression. The evidence suggests there are important opportunities to strengthen parenting and, in doing so, strengthen outcomes for children. Parental depression is an area that particularly offers promise due to its high cost and prevalence and the availability of a variety of interventions that have shown encouraging results.

Four key principles underlie our work in prevention. 1) Toxic stress not only occurs within children, it is an environment that also has a profound effect on parents. 2) At policy and program levels, we need to think about families, not individuals, to have the greatest impact. 3) Prevention requires a paradigm shift from a clinical focus on treating an acute problem to a long-term developmental, interdisciplinary focus on system change. 4) Preventionists are interested in qualities within individuals, families, and institutions that can become self-sustaining and lead to ongoing improvements in functioning with the long-term goal of facilitating the healthy development of children and their families.

Major mental illnesses of adulthood have their onset in childhood. Common risk factors for multiple disorders are identifiable in childhood, providing opportunities for prevention early in life. A major risk factor is parental depression, which can interfere with parenting quality and put children at risk for poor health and development at all ages. Depression affects 20% of adults in their lifetime, yet very few trials treating depression report whether or not the subjects are parents or whether the treatment affects children. More data must be collected in this area.

Depression is the most treatable of major mental illnesses. There are many different treatment strategies and choices for people, including cognitive behavioural therapy, interpersonal therapy, mindfulness techniques, and medication. Yet 40-70% of depressed persons do not receive any kind of treatment. A meta-analysis of randomized controlled depression-prevention trials in adults suggests that approximately 22% of major depressive episodes can be prevented. Promising intervention strategies for parents include treatment, providing help with parenting, using an approach involving at least two generations, and in some cases directly involving children. Depression prevention can be an outcome of other interventions in broader systems that help parents become more effective, such as job retraining for unemployment. Broader preventive interventions that support families – such as Head Start, Early Head Start, and home visitation – should be universal.

Many promising strategies exist, but the question is how to take them to scale for a population-level impact. Systemic and financial barriers need to be addressed. Preventive interventions should be funded as a regular part of health care and education. As interventions are developed, it is important that they be tested in a variety of circumstances. Core principles should include capacity for use by a wide range of healthcare practitioners, strong cognitive orientation, inclusion of the whole family and integration of their individual experiences, and a developmental perspective. Interventions should be strength-based and resilience-based, viewing parents as capable of doing things and helping them find the resources to do them.

Family Talk is one example of an effective evidence-based public health intervention for families where a parent has depression. Designed to build strengths within families, it combines family-specific psycho-educational materials about depression with a series of sessions helping families talk about depression and how to deal with it. Family Talk has been adapted to a variety of cultures – including Latino-American and African-American families – and is among a wide range of interventions that have been effectively implemented in national systems around the world.

Recommendations for policy and practice. When adapting interventions to specific populations, pair specific, measurable outcomes with broader vision, and set specific goals for positive change for families, caregivers, and systems. Provide adequate support and training for staff and make advocacy a fundamental part of research and practice. Treat families as equal partners: parents and children are the experts on their own families, and significant change occurs when families can make the intervention their own. Embed services for depressed parents within the services they already receive. Use a phase-sequential approach: start small and get a program working well before expanding it throughout a system. Evaluate carefully and constantly improve.

"Prevention requires a paradigm shift. If I'm a clinician and I'm seeing a child with an acute illness, my duty is to relieve the suffering, to use evidence-based treatment and have it remit. If I'm doing prevention, I'm asking the question: what does this child need one, three, and five years down the line? What different kinds of systems need to be in place and interact to enable that to happen? And these go far beyond the individual child and the family." **William Beardslee, MD**

"As a basic scientist and academic, I tend to navel-gaze. This prepares me to make my research matter. I don't normally see policy makers so I can ask them directly if my research makes sense. Here I can do it right away." **Participant**

The Alberta Lens

Faculty presenters from the Government of Alberta and Alberta Health Services (AHS) provided participants with an overview of Alberta's new policy frameworks and how they relate to the Alberta Family Wellness Initiative's (AFWI) three-year strategy to better integrate scientific knowledge into policy and practice to benefit Alberta's children and families. Alberta's Chief Medical Officer of Health described the development of his first report, *Let's Talk About the Early Years,* which incorporates many of the learnings from the first EBBD Symposium, including the core story of early brain development. Participants also heard how knowledge from the first EBBD and RFA Symposia informed the development of Alberta's Addiction and Mental Health Strategy. The new Strategic Clinical Networks being rolled out within AHS, including Addiction and Mental Health among the first six, were described as promising vehicles for moving research into policy and front-line practice. An overview of maternal child programs provided a window on how AHS brings science into policy and practice. Participants also heard about the challenges and opportunities created by the realignment of social policy and programs into the new Department of Human Services and ongoing initiatives for research-based transformation in Alberta's K-12 education system.

Abstract:

LET'S TALK ABOUT THE EARLY YEARS

By André Corriveau, MD, MBA, FRCPC

Dr. André Corriveau chose early childhood development as the focus for his first major report as Chief Medical Officer of Health because of the strong connection between the early childhood years and lifelong health, well-being, learning, and behaviour. The report, entitled *Let's Talk About the Early Years,* was intended as a tool to bring forward new scientific knowledge about early childhood development and facilitate conversations among all Albertans to keep this issue in the forefront of public policy in Alberta.

The key message of the report is: no matter who you are, where you live, or what you do, you can play a critical role in supporting a positive environment and positive experiences for children in their early years. The science has made it clear that the early years are vitally important: it is a period that can never be fully made up if we miss the boat in this area. When we invest wisely in children and families, we benefit from the constant renewal of people who contribute a lifetime of productivity and responsible citizenship.

Development of the report engaged key individuals and organizations working in the field of early childhood development. Their input helped determine the focus and scope of the report and created a network of relationships that would facilitate dissemination of the report and discussions about it long after its release. Members of the editorial committee came from a wide variety of backgrounds and were chosen not only for their expertise, but also for their commitment and passion for the topic.

***Let's Talk About the Early Years* essentially tells the core story of early childhood development** that has been at the heart of the Early Brain & Biological Development Symposia over the past three years. It talks of the gap between what we know and what we do; why early relationships and experiences matter; how brain architecture gets built; and how toxic stress can hinder successful early childhood development. The report also talks about what current Alberta families look like, emphasizes that it takes a village to raise a child, and stresses the importance of measuring what we value.

The report was released through key partners and organizations. It was posted online with links through the Norlien Foundation, Alberta Education, and other government representatives, partners, and stakeholders who might have opportunities to influence policy and public discourse. By June 2012, it had gone through two reprints for a total of 5,000 printed copies, and demand was continuing. The reach of the report was extended further through presentations at many forums, involving people at the front lines of service delivery, people in training to work in this area, and a wide range of Albertans in organizations across the province. Copies of the report are available in every First Nation community in Alberta where there is a Head Start program. Feedback has been extremely positive, not only within Alberta but also from other parts of Canada. Most significant is the response and uptake by front-line people who work directly with children, parents, and families.

Where do we go from here? The report names a number of steps for moving forward:

- Get the basics right: access to medical care for pregnant women and children during pregnancy, delivery, and after childbirth. Primary Care Networks and Family Care Clinics provide an opportunity to incorporate into our primary care model best practices from the science of early childhood development, for example regular screening for maternal depression.
- Provide parents with flexibility to spend quality time with their very young children. This involves addressing regimes for providing parental leave and income support, an area where employers have an important role to play.
- Build on what we know is effective, including early and intensive home support programs for children and parents.
- Provide high-quality, accessible, and affordable opportunities for early childhood learning and care for all children who need them.
- Develop a comprehensive approach and a common set of indicators across sectors to measure children's "life readiness" and how our young children are doing overall.

We need to ensure a truly integrated system for early learning and care across Alberta. This means getting out of our silos and translating what we have learned about early childhood development into concrete action. We all have a stake in ensuring a healthy early childhood environment for all Alberta children.

"One of the key messages is that we're all in this together, and everybody has something they can contribute. No matter where we interface with children or with new parents, we can make a difference." **André Corriveau, MD, MBA, FRCPC**

Abstract:

ALBERTA'S ADDICTION AND MENTAL HEALTH STRATEGY

By Margaret King and Catherine Pryce, MN, RN

Scientific evidence presented at the Early Brain & Biological Development (EBBD) and Recovery from Addiction (RFA) Symposia is already being used to transform policy and practice in Alberta. EBBD evidence, including concepts from the core story of early brain development, informed the development of the Alberta Addiction and Mental Health Strategy (AAMHS). As the strategy moves into action planning, the dialogue that began at the 2010 EBBD is continuing at the policy and practice levels throughout Alberta's addiction and mental health system.

The opportunity to develop Alberta's first provincial strategy for addiction and mental health arose with the creation of Alberta Health Services (AHS) in 2009, which consolidated the regional health authorities, the Alberta Mental Health Board, and the Alberta Alcohol and Drug Abuse Commission (AADAC). The process, co-chaired by AHS and Alberta Health, began shortly after EBBD 2010 and involved 17 relevant ministries in the task of realigning their activities and processes into a comprehensive approach to service delivery. An oversight committee involving all major stakeholder groups was engaged to ensure that the policy and action plan would be appropriate from their perspectives.

The AAMHS begins with the principle that "any door is the right door" to access the appropriate service wherever and whenever it is needed. Other principles at the heart of the strategy include choice, flexibility, responsiveness, and accountability. The AAMHS names five strategic directions: 1) Build healthy and resilient communities; 2) Foster the development of healthy children, youth, and families; 3) Enhance community-based services, capacity, and supports; 4) Address complex needs; and 5) Enhance assurance. The strategy lists seven enablers critical to building the capacity and infrastructure required to achieve intended results: policy direction and alignment; individuals with lived experience and family engagement; funding and compensation frameworks; workforce development; research, evaluation, and knowledge translation/use; leverage technology and information sharing; and cultural safety, awareness, and competency.

Many participants in the EBBD Symposia played a part in building the strategy. The FrameWorks Institute was engaged in the development of *Creating Connections: Alberta's Addiction and Mental Health Strategy* to ensure that the language in which the strategy was framed was congruent with some of the discussions taking place at the Symposia. The strategy's focus on healthy children, families, and communities and on the connections between early brain and biological development and the prevention of negative health outcomes particularly mirrors the work of the Symposia.

Links with the core story of early childhood development and concepts discussed at EBBD 2010 are evident in several key initiatives. For example, early childhood, maternal and family health – an initiative pertinent to building healthy and resilient communities – connects with EBBD presentations on parent-infant interaction by Linda Mayes and on brain plasticity and behavioural development by Bryan Kolb. Some of the populations most at risk, such as families with intergenerational issues of addiction or mental illness, are included in the second strategic direction, which states in its prelude: "... early experiences literally shape how the brain gets built. A strong foundation in a child's early years increases the probability of positive outcomes. A weak foundation increases the odds of later difficulties, including later mental health problems and addictions." This is an area informed by the core story of early brain development and the Adverse Childhood Experiences (ACE) Study findings about the cumulative effect of toxic stressors. A third strategic direction, enhancing assurance, speaks to the importance of robust oversight policies and timely knowledge translation. A key initiative in this area, workforce development, is being addressed in part by supporting staff participation in the EBBD and RFA Symposia and encouraging staff to use the resources on the Alberta Family Wellness Initiative (AFWI) website.

AHS is now developing action plans for implementing AAMHS priorities. Where to begin? Building resiliency and protective factors are areas where evidence can inform the translation of the strategy into action. Information shared through the EBBD and RFA Symposia regarding stress inoculation, positive parenting, and social and emotional development will be instrumental in doing this. Work in these and other areas of knowledge will continue to inform the strategy as it evolves. Current priority action items range from prenatal and at-birth screening for all children and mothers, and home visitation programs and outreach promotion and prevention services for at-risk families, to establishing local, regional, cross-sectoral committees supporting a wraparound model for care of children, youth, and families. The Government of Alberta has created the policy climate, or environment, for the AAMHS to move forward. Policy connections have been made across government and relevant initiatives are underway in areas from education to human services to justice.

"While we still realize that there's a need for delivery of services to those who are going through acute and chronic phases, we really want to get upstream and begin to turn it around, begin to look at prevention, begin to look at healthy children and families." **Margaret King**

Abstract:

Addiction and Mental Health Strategic Clinical Network in Alberta Health Services

By Glenda MacQueen, MD, PhD, FRCPC

Alberta Health Services (AHS) has started to roll out its new Strategic Clinical Networks (SCNs). The Addiction and Mental Health SCN is among the first six SCNs to be launched. SCNs are entities that will help AHS meet its mandates of improving population health, ensuring continuous quality improvement, incorporating research into practice, focusing on patient outcomes, designing more accessible care, and developing appropriate clinical practices as it manages an increasingly complex healthcare system. This complexity can sometimes lead to an over-focus on access – particularly in mental health, where access has been a perennial problem – without considering quality and the experience of the patient to the same extent. A challenge is to maintain a balance of appropriate and equitable access, quality, and sustainability. AHS measures quality across six dimensions: accessibility, appropriateness, efficiency, effectiveness, safety, and acceptability.

SCNs are collaborative clinical teams, with emphasis on clinical. The teams are led by clinicians, driven by clinical needs, and comprised of clinicians from various professions, including primary care and community-based providers. Members also include researchers, AHS zone leaders, content experts, and other partners. Networks are a proven model for promoting collaboration, joint decision-making, shared learning, and uptake of clinical experience and research to reduce variation and improve care. Reducing variation in care across the province is a key mandate and will be one marker of success.

SCNs will bring research, practice, and policy together, with common language and objectives, to affect change. This is similar to the dynamic that the Alberta Family Wellness Initiative (AFWI) is creating through the Early Brain & Biological Development and Recovery from Addiction Symposia. SCNs will undertake a long-term view of needs, engage research to solve clinical problems, prioritize outcomes and interventions for improvement across care continuums, develop measures of performance, and lead or support public health. The SCNs differ from existing clinical networks in their broader mandate: their scope will eventually cover the continuum of care. Resources will include dedicated business intelligence and clinical design staff, embedded research expertise, funding to seed innovation and remunerate team members, and capacity and capability building – something that is particularly needed in addiction and mental health. Also very important for addiction and mental health, primary care will be a key system within the patient-centred provincial SCN model. Addiction and Mental Health (AMH), by its very scope, will overlap considerably with other SCNs.

The Addiction and Mental Health SCN is starting with a project to develop a clinical pathway for adolescent depression. A clinical pathway for adult depression has already been developed by the provincial Addiction and Mental Health Clinical Network and is ready to be moved into the greater community. It made sense to capitalize on some of the work already done by developing an adolescent clinical pathway as a signature project for the AMH SCN. A clinical pathway provides a set of protocols, based on best practices, to sequence the patient's clinical journey from beginning to end. It co-ordinates the roles of the multi-disciplinary care team; facilitates communications among team members, patients, and families; monitors and evaluates variances and outcomes; and ensures quality and safe patient care.

Building relationships will be critical to success. A number of challenges will need to be overcome. Primary care settings are the principal mental health care providers for the majority of depressed youth. Yet many primary care clinicians feel inadequately trained or supported to manage such cases. It will take time to build working relationships to ensure adequate assessment and follow-up in community settings, structure partnerships between agencies and professionals, and bridge the gap between research and clinical care.

Why this clinical pathway? The clinical pathway will offer a standardized approach to identifying and treating adolescent depression. It will ensure that youth and their families receive the right treatment – better matching patient needs to treatment options – at the right time. Adolescence, like the early years, is an inflection point where development can go off track. This is an opportunity to minimize that risk.

"One question that has come up is what sort of incentives we will use to engage physicians and other clinicians in these clinical networks. I think that for most of us who are clinicians, the greatest incentive is to see our patients do better. Our role is not so much to create a different incentive, but to try to remove the barriers that prevent clinicians from being able to provide the best care for patients." **Glenda MacQueen, MD, PhD, FRCPC**

Abstract:

ALBERTA HEALTH SERVICES MATERNAL CHILD PROGRAMS: WHERE EARLY CHILDHOOD SCIENCE, PRACTICE, AND POLICY COME TO LIFE

By Michelle Craig, MSLP, and Maureen Devolin, RN, MEd

Alberta Health Services' (AHS) maternal child programs demonstrate how AHS' planning and implementation processes bring science into programs, practice, and policy. AHS provides a wide range of maternal and child health programs across the continuum of care throughout Alberta. These programs address surveillance; screening and early detection; well child clinics (immunizations); health information; preconception, prenatal, postpartum, and early childhood programs; and specialized health programs in a variety of settings.

AHS plans and delivers maternal child programs within a complex system. Strategic Clinical Networks (SCNs) are primarily responsible for strategic direction and innovation provincially, while Central Services is responsible for program planning and design, and the five zones are the program implementers. Maternal child health and well-being is a shared responsibility across several ministries, including health, human services, and education, as well as various non-government services. AHS provides services, conducts monitoring and surveillance, and works in collaboration with partners across these areas. Delivery of maternal child health services happens across a continuum of care starting with Health Promotion and Prevention within AHS and going from primary care to secondary (community and clinical) care through tertiary care, including community and children's hospitals. Primary care is generally the first point of contact with the healthcare system and covers a wide range of community services, including Primary Care Networks, Family Care Clinics, and regulated health professionals. Maternal child services in primary care include, among others, low-risk maternity care, family counselling, well-child care, parent education and counselling for infant health and development, health promotion, and referrals to secondary and tertiary services.

AHS carries out maternal child programs within the Population and Public Health area. These include systematic collection of data to help decision-makers monitor trends. Screening programs, such as those that target women for postpartum depression, aid in early identification. Well-child clinics deliver immunization programs, growth measurement, and some developmental screening. Other programs include preconception classes; prenatal education classes and nutritional programs for vulnerable populations; early childhood programs; and parenting programs. Health information is delivered online, by telephone through Health Link, and through print materials such as *Growing Miracles,* which provides information on early childhood development. Specialized health programs serve areas such as oral health, and addiction and mental health. Programs are developed within an integrated planning and evaluation framework that incorporates science, policy, and practice into an ongoing cycle of situational analysis, strategy and resource analysis, program development, evaluation, and continuous improvement.

The Prenatal/Postnatal and Early Childhood (PEaCh) Health Resources initiative is an example of how the framework functions. When AHS was reorganized, there was an array of different resources in this area across the province. The project task was to create evidence-based, standardized health resources for expectant parents and parents of children 0-5 years old across Alberta. A health promotion collaborative of representatives from numerous stakeholder groups is guiding the development of these resources. A PEaCh product working group, with zone representation, creates the resources, with much of the work accomplished by a core team (PEaCh Provincial Implementation Team). The PEaCh Product Management Framework incorporates science, practice, and policy as it progresses through phases of planning, product analysis, product development and implementation, dissemination and marketing, and evaluation.

One product of this process is the PEaCh Safe Infant Sleep resource. The project was initiated by the Alberta Medical Association and the Alberta Perinatal Health and Reproductive Health Care Committee in response to a growing trend where bed-sharing was seen as a factor in the sudden unexpected deaths of infants during sleep. The process started with a literature review of the science, expert consultation, and an environmental scan of existing resources on the topic. Marketing research determined what parents and healthcare providers needed in a resource. A parent information brochure, professional information brochure, and training resources were developed. The project continues to evolve.

Work on perinatal depression and anxiety is being undertaken in a joint initiative of AHS and Alberta Health. The goal will be to develop an evidence-based, integrated approach to perinatal depression and anxiety screening, assessment, referral, and treatment services. Science, practice, and policy will be integral components of the process.

"From the perspective of somebody who works in the early childhood community, the work of the EBBD Symposia has created an increased focus and common language in the professional, policy, and research communities I work with in terms of people talking about things the same way and understanding the importance of the early years. I really feel like it's cleared a lot of land for us and given us very good possibilities to move a lot of positive initiatives forward. It has really made a big difference." **Maureen Devolin, RN, MEd**

Abstract:

A SOCIAL POLICY FRAMEWORK FOR ALBERTA

By Shannon Marchand

In 2011, the Premier of Alberta mandated the newly created Ministry of Human Services to work with other ministries to develop a social policy framework for the province. The framework will guide the alignment and redesign of social policy and programs to achieve better outcomes for children and families in Alberta. This priority government initiative sets up the broad policy framework within which knowledge about early childhood development can be acted upon to drive system transformation.

The complexity of the system presents challenges on multiple levels. The system involves many actors – governments, agencies, research institutions, families, and individuals – and a legacy of embedded policies and practices, not only within government but throughout the broader community. System transformation requires a simple policy framework to guide decision-making and program development to best meet the growing and diverse needs of Albertans, with a clear vision for the future. The Government of Alberta recognized the need for a social policy framework that provides consistency for activity across a range of departments. The creation of Alberta Human Services reinforces this alignment and integration by incorporating Employment and Immigration, Children and Youth Services, and significant components of other ministries dealing with human needs.

The social policy framework will provide overall direction for social policy in Alberta. Social policy is fundamentally about the kind of society Albertans want for themselves, their families, and their communities. While government is playing a leadership role in facilitating the development of the framework, a driving imperative behind this work is the need for individuals, families, communities, and government to come together to solve social issues. The framework will be a living document in the sense that it will be both impactful and continuously evolving over time. The document will speak to broad vision and guiding principles. It will outline outcomes to be achieved and measures for assessing progress in achieving them. It will clearly articulate roles and responsibilities of government, individuals and families, and community organizations. And it will define strategies for moving forward. A major function of the framework will be the communication of a common understanding among all players.

Work to date has involved extensive research and consultation. This includes internal staff focus groups and staff surveys, telephone public opinion surveys, Government of Alberta policy and best practices scan, and a review of policies and best practices in other jurisdictions. The work of the Norlien Foundation and the FrameWorks Institute in framing the core stories has been instructive in conceptualizing social policy and framing the discussion in a way that is broadly accessible. Initially, approximately 10,000 stakeholders, citizens, and staff were engaged to provide input on the scope, purpose, and outcomes. Research has identified trends and issues that are both population-specific – e.g., Aboriginal people, newcomers, people with disabilities – and sector-specific, such as early childhood education and development, housing, and homelessness. Key drivers include a changing population that is young, growing, and increasingly diverse, but also aging. External factors, such as globalization, are also making a social impact. System transformation in this complex context will not be easy. Challenges will come not only in integrating parts of the system, but also in allocating resources to fit various levels of need, facilitating system navigation, and accommodating service delivery to changing technology.

Early feedback defined what Albertans want in a social policy framework. It should be transformational, comprehensive, integrated, preventive, evidence-based, and oriented around abilities and strengths. More intense public engagement was conducted in the summer of 2012. One aspect involved an online collaborative platform, inviting all Albertans to engage in the discussion. A second prong involved community conversations led by community organizations or by Members of the Legislative Assembly, with resulting input posted online. This activity will be ongoing and will provide a high level of transparency and clarity to the decision-making process. A draft framework is expected to be finalized in fall 2012.

"This really is a priority initiative of the government. There's a high level of senior engagement. We're reaching out very broadly to a wide range of organizations, internally and externally. We sense so far that there is a lot of enthusiasm and excitement, so we think Albertans will engage in this process." **Shannon Marchand**

Abstract:

BUILDING A BETTER SYSTEM – HOW BRAIN RESEARCH IS SUPPORTING EDUCATION TRANSFORMATION

By Keray Henke, MA

Alberta Education has undertaken a number of parallel initiatives in recent years to transform the education system in Alberta. The process of building a better system is informed by brain research, which is providing new knowledge about the many ways humans learn. However, the process of translating that research into education policy and practice is complex and challenging on many levels. Changing public policy also requires changing public opinion, ingrained habits, and community expectations. Transformation at this level must involve all education partners, including students, parents, teachers, local communities, businesses, and not-for-profit organizations.

Community conversations are an essential precursor to complex system transformation. Alberta Education started an overarching system transformation in 2009 with A Dialogue with Albertans: Inspiring Education, an extensive process of community conversations designed to enhance an appreciation for education, define the characteristics of an educated Albertan in the 21st century, and inform public policy decisions. The government followed up with *Inspiring Action on Education,* a discussion paper distilling the vision, values, and principles derived from the public consultations. It then embarked on development and debate of a new education act. Passage of the act and adoption of policy are only part of the process moving forward. Implementing a public policy shift requires an understanding of the behavioural changes and competencies that are needed in practice to make it happen.

Knowledge from brain research is having a significant impact on curriculum, instruction, assessment, and teaching practice. The Alberta curriculum is designed to support how students develop cognitively, emotionally, physically, and socially from kindergarten through graduation. It recognizes that students will progress at different rates and that learning occurs at any place, at any pace, any time. Differentiated instruction will be based not only on age, but also on observed behaviours and in some cases knowledge of circumstances in the child's background. Building and delivering a program of studies that is research-based will require expansion and broader dissemination of the narrative of early brain development and how learning occurs.

The Framework for Student Learning embeds competencies that contribute to success for all students. In talking about preparing students for the future, Albertans said they aspired to graduating students who are engaged thinkers and ethical citizens with an entrepreneurial spirit. A student-centred Framework for Student Learning is guiding development of a curriculum that combines knowledge with the competencies required to realize these "3 E's." Learning will be based on a foundation of literacy and numeracy reinforced by seven key competencies that are research-driven and embedded in defined subject areas. These competencies are: critical thinking, problem-solving, and decision-making; creativity and innovation; social, cultural, global, and environmental responsibility; communication; digital and technical fluency; lifelong learning, personal management, and well-being; and collaboration and leadership.

Research also plays a key role in several other Alberta Education initiatives. The Early Childhood Development Mapping Initiative is a province-wide five-year initiative that gathers data on school readiness of five-year-olds, socio-economic factors that influence children's development, and community capacity and resources. The data will be plotted on maps for every community in Alberta. This information will assist communities in developing assets that can ensure higher levels of school readiness. The High School Flexibility Project freed 16 pilot schools of the requirement for 25 hours of instruction per credit in order to motivate innovation. By breaking down barriers such as timetables, the project has resulted in a critical analysis of current practices, experimentation with innovative practices, and a shift toward a system that better balances learning processes and learner outcomes. The Alberta Initiative for School Improvement encourages teachers to become applied researchers. The initiative allows school jurisdictions to create innovative projects that can be carried out from development to implementation to evaluation within three years. Inclusive Education is a design for learning that builds capacity to include all students by providing the most appropriate learning environments and opportunities for them to best achieve their potential. The Mental Health Capacity Building in Schools Initiative, led by Alberta Health Services in collaboration with Alberta Education, creates opportunities for teachers and community leaders to plan how to work with children at risk. Every parent and every business are potential partners.

These are some of the ways Alberta Education answers the question: how can we use research effectively to transform our system to the benefit of our students but ultimately to the benefit of our civilization and our citizens as a whole?

"What we're trying to do now is, rather than label and discount the ability of people to actually thrive in our classrooms, we're trying to find strategies that fit their differentiated learning styles and understand, because of brain research that we've been exposed to, that there isn't only one way to learn and not only one way to teach." **Keray Henke, MA**

The Path Ahead

Where do we go from here? The work ahead in Alberta was outlined from two perspectives. FrameWorks presenters discussed communications strategies to strengthen the evolving core story around the science of early childhood development by incorporating the story of addiction to create a single powerful narrative. This research dovetails with the Alberta Family Wellness Initiative (AFWI) meta-strategy to merge the EBBD and RFA strategies into a combined Symposium October 28 through November 1, 2013.

Looking at the big picture of system transformation in Alberta, Nathaniel Foote outlined a model for transforming Alberta's accumulated social capital into communities of shared purpose mobilized around stretch outcomes.

Abstract:

IT TAKES A LOT TO BREAK A GUESSING MACHINE: TRANSLATING THE NEURODEVELOPMENTAL SCIENCE OF ADDICTION TO REFRAME EARLY CHILD DEVELOPMENT

By Susan Bales, MA, and Nathaniel Kendall-Taylor, PhD

At the request of the Norlien Foundation, the FrameWorks Institute undertook an investigation of the neurodevelopmental story of addiction, the aspect of addiction that relates to its intersection with early child development. After a series of qualitative and quantitative studies with ordinary Albertans, it became clear that there was a lack of understanding of connections between notions of "development" and "addiction." Addressing this gap brings the story of addiction into the larger core story of early child development, creating a single powerful narrative that not only opens up new, more productive ways to think about addiction, but also adds nuance to the overall narrative of why early child development matters, how it works, and how to fix it when it goes off trajectory.

One of the biggest challenges to public communicators is overcoming the audience's guessing machines. The quick and easy way people tend to deal with new information – by making it conform to preconceived cultural models – is highly problematic for translating science and difficult to dislodge. Reframing has the power to break people's guessing machines by introducing a different way of thinking. FrameWorks does this by substituting a well-developed and empirically tested narrative structure to override people's default patterns of thinking about a complex, abstract issue. The narrative incorporates tested values as redirecting devices, to remind people how the issue connects to values they already hold, and uses metaphors, or simplifying models, to concretize and enhance understanding of complex aspects of the issue. This narrative capacity is at the heart of the core story of early child development, which draws, for example, on the value of interdependence to explain why other people's children are everyone's concern and uses metaphors including serve and return, brain architecture, and air traffic control to describe brain development. The original core story was strengthened by the addition of new modules from the science of child mental health, such as the metaphor of levelness describing a child's relationship to his or her environment as being like that of tables to floors.

The developmental story of addiction adds a new chapter and more robustness to the core story of early child development. FrameWorks researchers found that many of the cultural models that people use to think about addiction are also found in the swamp of cultural models operative in their thinking about early child development, such as determinism, individualism, and ideas that good programs are more about quantity than quality. Because of the modular nature of these elements, tools designed to address cultural models in addiction can be used to dislodge the same cultural models behind thinking about early child development.

FrameWorks mapped the gaps between the experts' story of the neurodevelopmental early roots of addiction and the public's concept of addiction. Their research turned up major differences, ranging from definitional focus (neurobiology vs. external substances or individual need) and where the process occurs (brain vs. character, constitution, or will) to potential for change (prevention by intervention in early childhood vs. damage done is damage done). To begin to address these gaps, FrameWorks developed and tested a number of metaphors and values for their effectiveness in aligning Albertans' thinking about addiction to that of the experts. Three of the tested values – interdependence, prevention, and ingenuity – increased support for addiction policy solutions; although it is important to note that they worked in different ways to support different issues within addiction. A fourth value, empathy, which is currently used in the field to talk about addiction, was tested and shown to depress support for addiction policies.

Among the metaphors tested, "brain faultlines" was the clear winner. This simplifying model can help break a guessing machine's patterns of thinking about addiction and set in motion a more productive thought process: If addiction is like an earthquake, then there are underlying susceptibilities; causation is a complex interplay between genes, biology, and environmental factors; unbuffered stress is a key trigger; there are brain-based processes shared across individuals and addictions; and there are different ways to address brain tectonics. This model inoculates against cultural models that block thinking about addiction policy, including the power of will and "damage done is damage done"; is highly communicable; and is very sticky. Most important, it intersects with the core story of early child development in many ways, creating a new chapter within the story. By adding new frame elements, the brain faultlines model allows a communicator more flexibility in telling the core story using different modules to create the narrative. In this way, the addiction story adds firepower to help break down those problematic guessing machines and provides another powerful tool for communicating about early child development and child mental health.

"Just imagine the power of having early child development experts, scientists, and practitioners; child mental health experts, scientists, and practitioners; and addiction experts, scientists, and practitioners all telling a common story that can really reframe the way that Albertans think about children's issues." **Nathaniel Kendall-Taylor, PhD**

Abstract:

MOBILIZING COMMUNITIES OF PURPOSE AROUND STRETCH OUTCOMES

By Nathaniel Foote, MBA, JD

The Alberta Family Wellness Initiative (AFWI) and the Early Brain & Biological Development (EBBD) Symposia have created the potential for significant advances in Alberta's outcomes for early child development. Models for innovation drawing from the private sector suggest implications for the path ahead.

What is the progress to date? Three things stand out. First is knowledge access: the core story of early brain development has penetrated beyond the participants in this initiative, enabling people to access the science and work more effectively. Second is the building of social capital: creating a shared language and knowledge base has allowed people and institutions to transcend professional boundaries and achieve a different level and quality of collaboration reinforced by the relationships and trust that have been built here. The third achievement is the emerging application of science to policy and practice. There is a top-down energy, represented by the high-level policy frameworks being developed, and the potential to create a bottom-up energy as initiatives to modify curricula for professional training engage a whole other level of individuals in this effort.

What are the implications? There is the potential in Alberta to inspire a very distinctive system transformation. This is essentially a process of innovation, so it might be helpful to look at some models of innovation. For example, in the private sector, there are product innovators who create better products and look at various ways the products can be applied and improved. The analogy in the present case might be a researcher who has developed a new intervention. There are also solution integrators, who try to integrate a variety of innovations into a solution that will achieve specific outcomes to more effectively serve a particular customer base. In Alberta's case, that might be a population of children for whom you are trying to make a difference. Product innovators and solution integrators complement each other in the private sector, where the drive for improved outcomes energizes and focuses innovation. The question is how to create a system with the same adaptive improvement quality that is built into the market economy.

This is the idea behind the architecture that has evolved for the Frontiers of Innovation initiative developed by the Harvard Center for the Developing Child. The analogues to the product innovators are ideas-to-action groups that work in particular areas, such as caregiver capacity. On the solution integrator side, there are innovating sites that are trying to bring solutions together for a local population, and innovating states (or provinces) bringing solutions together at a higher level. These are three domains where we need to encourage innovation that's complementary. As an example, Washington State is an innovating state that is advancing its agenda by connecting and sharing with other innovation initiatives across the United States in areas including building caregiver capacities, building family and community resources, executive function, and professional standards. Alberta has the opportunity to connect what is happening in the province to the same architecture. Success in elevating the provincial system to higher levels of innovation will require:

- Breakthrough goals for improved outcomes.
- Commitment from a critical mass of provincial leadership, which Alberta has.
- Explicit impact strategy and innovation agenda.
- Transparency in sharing progress, being open about what is working and what is not.
- Shared aspiration for mutual success and collective impact.

Now what comes next? To unleash the potential created by the AFWI's initiative and accelerate innovation in Alberta, the path ahead will involve transforming a knowledge focus into an outcomes focus, a shared science understanding into a shared theory of change, and the accumulated social capital into communities of shared purpose. Communities of purpose are the foundation of high-performing institutions in the private sector. They bring together diverse players working across boundaries and multiple levels with a shared purpose, mutual commitment to perform and to learn, a drive for both short-term and long-term results, and shared language and trust. Together these elements create a reinforcing positive spiral of raised aspirations, raised commitment, and raised achievement. The most powerful feature of this concept is that it plays out at all levels, from a small organization at a single site to the provincial level. Wherever you are in the system is a starting point for system transformation. Each individual can begin by reflecting on a number of questions, including: For what populations of children can my work improve outcomes? Who else is part of improving outcomes for this population? What agenda will best accelerate progress?

"I've been struck by the diversity, the quality, and the commitment of the participants in this initiative, and the extent to which there is real reflection about their own work and their sense of possibility. They're an inspiring group and one that I feel has remarkable potential." **Nathaniel Foote, MBA, JD**

PART 3

"This has been an absolutely fascinating three years. What really stands out is that it started with a lot of confusion – so many people and ideas. I wondered how to make sense of it all. Now we're really seeing how science, policy, and practice start to come together. When we heard scientists speak, it empirically validated interventions we can bring into practice ... It's very exciting. There's so much I can do. Now I know where I can make a difference and make sure it's sustainable." **Participant**

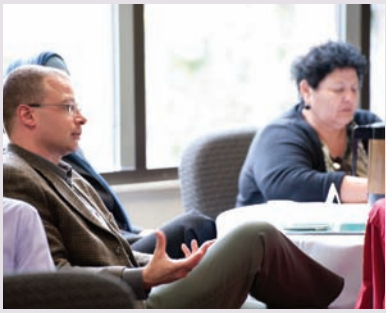
Implications for the Science, Policy, and Practice Communities in Alberta: What we need to do and how to do it

As the Alberta Family Wellness Initiative's (AFWI) Early Brain & Biological Development (EBBD) strategy enters its third year, evidence is growing that the model is working. Transformative change is underway in Alberta, not only in the addiction and mental health system but within the broader system of policies and services that impact the lives of children and families in the province. One indication of the success of the EBBD strategy is the increasing overlap of science, policy, and practice issues in Symposium discussions. More and more researchers, policy makers, and clinicians are stepping outside their silos to form communities of shared purpose. Even as the system evolves, the knowledge upon which the system must stand also continues to evolve, as the EBBD science presenters so compellingly illustrated. While there is much progress to celebrate at this juncture, the presentations and discussions raised some cautionary notes and pointed the way to continuing the momentum that has been achieved so far.

Directions for Research

Boosting executive function

There is increasing evidence that developmental disruptions to executive functioning due to toxic stress can be mitigated to some extent through interventions targeted at retraining the pre-frontal cortex. This region, which is responsible for "air traffic control" functions such as self-regulation, planning, working memory, and decision-making, has a longer window of plasticity than other parts of the brain. Interventions ranging from computer programs to classroom-management strategies have shown that executive functioning skills can be taught and improved. More research is needed to build on this emerging knowledge about training for executive functioning, both with respect to early education programs and to interventions targeted at high-risk groups such as behaviourally inhibited children and children who have suffered neglect and abuse.



Better evaluation tools needed

Much discussion of system transformation has centred on the need to be able to quickly evaluate the efficacy of a program or intervention in order to facilitate rapid change. Traditional research evaluation protocols fall short on timeliness, unnecessarily hampering change and continuous improvement processes. There is considerable agreement that a quick-fail option is needed and should be routinely incorporated into research and program design. The question then becomes how to determine which dimensions of a project lend themselves to quick evaluation and how to measure them.

Better data collection and management

Calls for preventive population health measures, such as universal screening for depression or Adverse Childhood Experiences (ACE), raise the issue of data collection, both to establish the need for specific public health programs and to gauge their effectiveness once implemented. Participants pointed out the need not only to collect more data but also to analyze it and feed it back in forms that are meaningful for policy development. An example is AHS' ongoing collection of surveillance data for its maternal child programs. The data is analyzed, interpreted, and disseminated back to decision-makers so they can monitor trends and take appropriate action when needed.

Realignment of government departments and programs related to child and family well-being brought out concerns over separate data archives and the need to cross-reference them and make them more accessible across government. This was mentioned as a critical area for collaboration within the transforming system.

Inclusion of research in SCNs

The inclusion of research in Alberta Health Services' new Strategic Clinical Networks (SCNs) was seen as a very positive development that will further collaboration among science, policy, and practice. This development was seen as an indication that researchers are interested in aligning their work with Alberta's health priorities. It will also help ensure a faster conduit from research to practice and ultimately more evidence-based programs and services in the Province's addiction and mental health system.

"I have to give the Norlien Foundation so much credit for making this a multi-day curriculum. The participation is amazing. Everything has an action-related objective. Bringing together science, practice, and policy is not easy. They have been able to take the science and its messages and make something unique. With all this potential, this is just the beginning."
Participant

Implications for Policy

Community interventions to support the family are the number-one priority

A driving theme throughout the EBBD Symposia has been the importance of providing family and community supports. This imperative was underscored again in the 2012 EBBD Symposium. The science tells us that one or more stable, supportive relationships with adults in a child's life can be a powerful buffer against toxic stress. Policies that support parents and caregivers in this all-important role should be a number-one priority in both prevention and treatment initiatives. Particular emphasis was placed on the toxic effects of parental depression and the availability of a variety of effective approaches to identifying and treating parental depression to improve the health of children and families. The Adult Depression Pathway – developed by AHS' Addiction and Mental Health Strategic Clinical Network – is an opportunity to implement population-based health screening for depression at the primary care level. AHS' current initiative to develop an evidence-based, integrated approach to perinatal depression and anxiety screening, assessment, referral, and treatment services is another move in the right direction.

There was also discussion around the wider issues that affect maternal/paternal depression, such as housing, food security, and other problems related to severe poverty. The Alberta government's alignment and redesign of social policy and programs to achieve better outcomes for children and families, and the government's commitment to eliminating child poverty in Alberta within five years and reducing overall poverty within 10 years, are promising first steps toward addressing these concerns.

Strategies must be evidence-based, multi-pronged, and integrated

Infrastructure needs to be in place to provide the appropriate services when they are needed and innovative, evidence-based interventions as they become available. "Appropriate" and "evidence-based" are key concepts in this respect. While accessibility is a key dimension of quality in the AHS model, attention must also be paid to the appropriateness, effectiveness, and acceptability of options offered to the patient. We know from EBBD science that evidence-based strategies and interventions exist. One way to ensure the best possible outcomes for Albertans at the policy level is to require that programs and services receiving government funding be evidence-based. A truly patient-centred system must also offer the patient a choice of treatment options to minimize problems of non-compliance and improve patient participation. Finally, services must be integrated and linkages must be established so that the patient's pathway along the continuum of care is clear and no patient falls through the cracks.

Forge connections between the brain science and early learning

Presentations of promising evidence-based interventions for enhancing executive function derailed by toxic stress led to discussions around early learning. It was noted that results from the Early Childhood Mapping Project conducted by Alberta Education reveal that 27% of children entering kindergarten in the province suffer "great difficulty" in one of the five identified areas of development, above the national average of 25%. More conversation is needed in Alberta about early learning and ways of approaching it to achieve the best results for children at risk.

Shift focus from remediation to promotion and prevention

The vehicle for achieving the ultimate goal of healthy children, families, and communities will be a gradual shift in emphasis and resources upstream to health promotion and prevention. Alberta has a distance to go toward that future, but AHS' population and public health programs around maternal child health – including surveillance; screening and early identification; well child clinics; preconception, prenatal, postnatal, and early childhood programs – provide a picture of a system developing in the desired direction. Alberta's Ministry of Health has an associate minister responsible for wellness, signifying the importance of health promotion and prevention in provincial policy.

"On the whole this is one of the most creative and important events in Canada for children's mental health because it is seeking not only to create a coherence of understanding but also it is sharing this knowledge and language with people who make policy. To make it work, we have to get the message not only to administrators but also to the public and politicians, and that is starting to happen now. If Alberta pulls this off, it sets up a model for the rest of Canada. This project is wonderful to see." **Participant**

Expand communication of core story

Participants noted the remarkable reach of the core story of early brain and child development that has been achieved since the start of the EBBD strategy in 2010. However, there was concern that at this stage they are now "preaching to the converted." In order to continue the momentum already achieved, it is important to move the core story into the public square. As one participant noted, unless there is a public perception that change is needed, change won't happen. A strategy is needed to bring the public into the dialogue. A positive step in this direction was the publication of an entire issue of AHS' Apple magazine in fall 2012 devoted to early childhood and brain development. Core story messaging is also being embedded in AHS' Prenatal/Postnatal and Early Childhood (PEaCh) resources, currently under development for expectant parents and parents of children 0-5 years. Other Alberta-based vehicles for conveying the core story include the popular Science in Seconds video series (http://albertafamilywellness.org/families-individuals) and Health Unlimited Television (HUTV), which, in partnership with Alberta Health Services and Health Link Alberta, provides general health and wellness programs for medical waiting room screens and health facilities.

"The early years are a priority for our organization. All of the information, the knowledge base we've created here has an integral part in advancing our priority. We've been able to engage ministers; everything has been critical in providing a solid basis for me and in helping enhance the work we do."
Participant

Implications for Practice

Emphasize primary care

Primary care is the principal entry point into the healthcare system and the logical setting for screening and early detection on a public health level for toxic stressors and other family problems such as parental depression and addiction; brief interventions; and referrals into appropriate community programs. Primary care clinicians will need more information about and access to appropriate screening tools, evidence-based interventions, and other supports to manage these responsibilities. It will take time to build working relationships to ensure adequate assessment and follow-up in community settings, structure partnerships with community agencies and other professionals, and bridge the gap between research and clinical care. Alberta's developing system of Primary Care Networks (PCNs) and the recent roll-out of AHS' Addiction and Mental Health Strategic Clinical Network (AMH SCN) are addressing these and other issues, including variations in practice across Alberta. Some PCNs have already piloted AHS' adult depression clinical pathway, and the AMH SCN is working on development of a clinical pathway for adolescent depression.

Family engagement is critical

The importance of parent and caregiver attachments to healthy early child development underscores the need to increase family and caregiver supports at many levels. Resources that familiarize parents with the core story of early brain and child development should be provided to them at the earliest opportunity, prenatally or shortly after birth. Screening should be in place for early detection of parent/child attachment problems, including parental depression and addiction. The Adverse Childhood Experiences (ACE) questionnaire is one effective screening tool that has been presented at the Symposia and has been introduced in some Alberta Primary Care Networks. Treatment plans ideally will engage the whole family and include interventions aimed at strengthening parent/child attachment.

Professional training is key

Uptake of leading-edge knowledge about early brain and child development among clinicians and other professionals often depends upon education – where and when they trained, as well as professional development opportunities available to them. Participants agreed more attention to training about early childhood development and the core story is required, not only in the healthcare professions but also in education, social work, the judicial system, and other areas that impact children and their families. Significant progress has already been made with the development of new nursing curricula in Alberta incorporating learnings from the Symposia about early brain and child development, and addiction. Additions to training and

"This has been a mindboggling experience. I've never been so tired, so inspired, so excited! It's been a wonderful five days, a wonderful opportunity. The level of support, the quality of the people, and the quality of the information are extraordinary." **Participant**

professional development programs will require not only a baseline starting point with respect to knowledge included but also regular maintenance to guarantee continuation of competency and knowledge currency. The Norlien Foundation maintains an extensive library of professional resources on addiction and early brain and biological development on its Alberta Family Wellness Initiative (AFWI) website and has committed to continuing to make new resources available as they are developed.

Conclusion

It is clear from participant engagement in the AFWI strategy and from recent policy developments across the Government of Alberta that a collaborative approach toward problem-solving and improving early childhood outcomes is taking hold in the province. Knowledge access to the science and core story of early brain and child development has penetrated far beyond participants in the EBBD strategy and into every level of the system. The emphasis on relationships and cross-disciplinary collaboration has built a large pool of social capital featuring greater alignment not only of individuals but of institutions at multiple levels. Applications of the scientific knowledge to policy and practice are emerging both from the top down, in the form of high-level policy frameworks underway, and the bottom up in the potential for engaging whole new generations of practitioners through enhancements to professional training and curricula. To reinforce these advancements, EBBD participants need to continue to work across boundaries in communities of purpose united in pursuit of explicit goals for improved outcomes.

The ingenuity and solutions we need to make Alberta even better are now more evident than ever. The government is interested and supportive. Individual researchers, practitioners, and decision-makers throughout our systems are motivated, energized, and connected. It is up to all of us to keep the momentum going for the ultimate benefit of Alberta's children, families, and communities.

Closing Comments

"This has been a life-altering experience. It puts a new filter or perspective on what I'm doing and what needs to be done." **Participant**

The 2012 Early Brain & Biological Development Symposium was a fitting close to the EBBD Symposia series. Presentations and workshops focused on areas where research is already contributing significantly to evidence-based practice, or holds imminent promise, both in the field in general and in Alberta's health, education, and human services system. The influence of the Alberta Family Wellness Initiative's (AFWI) three-year strategy on change in Alberta was acknowledged, and future directions and challenges were discussed. The role of EBBD Symposia participants in promoting change in Alberta was celebrated as participants set out plans for maintaining the momentum and expanding the networks they have developed through their engagement in the EBBD strategy. Their networks will expand even further when they reconvene at the merger of the EBBD and Recovery from Addiction strategies at the Symposium scheduled for October 28 through November 1, 2013, in Edmonton.

The following are some participants' reflections on their EBBD experience over the past three years:

"This has been one of the most effectively organized and high-impact conferences I've been to. Everything ties in together so it can ferment and we can carry it forth into our work. It's the best kind of conference for bringing knowledge transfer about, both horizontally and vertically. I can't say enough about it." Participant

"I'm very happy with the whole initiative. It's an ambitious, noble effort. I have a lot of respect for what's happening at these Symposia (Early Brain & Biological Development and Recovery from Addiction). The science is the same; the participants are different. With regards to addiction, it's more of an eye-opener because it challenges traditional beliefs. In EBBD, we now have physical evidence of what we already knew, which gives it a whole new credibility." Participant

"It's really exciting to hear up-to-date research on a wide variety of topics and to talk about how it applies to your own practice. It enhances it to actually be able to talk with colleagues instead of just thinking about it and not actively fleshing it out. This makes change more likely." Participant

"I work in a Primary Care Network and I can say that what I have learned over the past three years of these Symposia has been absolutely practical. I've already spread information back to the clinic and I will continue to do so." Participant

"I feel really fortunate to have been involved in these Symposia. In real life I never have this opportunity. It's important that we continue this communication in the public square. There are teachable moments everywhere – hockey arenas, church and community events. Then the public will nudge the politicians and they will nudge the bureaucrats, and change will happen." Participant

Appendix I

SYMPOSIUM PEOPLE: DEVELOPMENT AND MANAGEMENT

The Symposium involved a great number of people in its development, planning, and delivery. They included:

Senior Leadership Team

Members of the team that directed the development of the Symposium's overall structure and format were:

Kim Ah-Sue, MA, Program Officer, Norlien Foundation

Alisha Devji, MPH, Program Officer, Norlien Foundation

Glenda MacQueen, MD, PhD, FRCPC, Professor, Department of Psychiatry, University of Calgary

Steve MacDonald, Deputy Minister, Human Services, Government of Alberta

Gillian Najarian, EdM, Deputy Director, Harvard Center on the Developing Child

Charles Nelson, PhD, Professor of Pediatrics and Neuroscience, Harvard Medical School

Kate Pedlow, LLB, General Counsel and Program Officer, Norlien Foundation

John Sproule, Senior Policy Director, Institute of Health Economics

Paula Tyler, President, Norlien Foundation

Design Committee

The development of the Symposium format and events was led by:

Kim Ah-Sue, MA, Program Officer, Norlien Foundation

Alisha Devji, MPH, Program Officer, Norlien Foundation

Deborah Dewey, PhD, Professor, Pediatrics and Community Health Sciences, University of Calgary; Director, Behavioural Research Unit, Alberta Children's Hospital

Carole Anne Hapchyn, MD, FRCPC, Clinical Professor, Psychiatry and Pediatrics, University of Alberta; Program Psychiatrist, Infant Services, CASA Child, Adolescent and Family Mental Health; Medical Director, Autism Clinic, Glenrose Rehabilitation Hospital

Anita Kozyrskyi, PhD, Associate Professor, Department of Pediatrics, University of Alberta

Frank MacMaster, PhD, Cuthbertson and Fischer Chair in Paediatric Mental Health, University of Calgary

Sandra Mintz, MBA, Executive Director, Chinook Primary Care Network, Alberta Health Services

Kate Pedlow, LLB, General Counsel and Program Officer, Norlien Foundation

Brent Scott, MD, MSc, Director, Alberta Children's Hospital Research Institute for Child and Maternal Health, University of Calgary

Kesa Shikaze, BScOT, Project Manager, Alberta Health and Wellness, Government of Alberta

Paula Tyler, President, Norlien Foundation

Curriculum Committee

Kim Ah-Sue, MA, Program Officer, Norlien Foundation

Alisha Devji, MPH, Program Officer, Norlien Foundation

Steve MacDonald, Deputy Minister, Human Services, Government of Alberta

Glenda MacQueen, MD, PhD, FRCPC, Professor, Department of Psychiatry, University of Calgary

Gillian Najarian, EdM, Deputy Director, Harvard Center on the Developing Child

Charles Nelson, PhD, Professor of Pediatrics and Neuroscience, Harvard Medical School

Kate Pedlow, LLB, General Counsel and Program Officer, Norlien Foundation

Paula Tyler, President, Norlien Foundation

The Norlien Foundation

Nancy Mannix, JD, Chair and Patron

Staff

Paula Tyler, President

Kate Pedlow, LLB, General Counsel and Program Officer

Nicole Sherren, PhD, Scientific Director and Program Officer

Kim Ah-Sue, MA, Program Officer

Marisa Etmanski, Director of Edmonton Office

Alisha Devji, MPH, Program Officer

Kathryn Shimbashi, Executive Assistant and Special Projects

Teresa Stewart, Executive Assistant

Kate Stenson, Administrative Support

Liza Contreras, Administrative Support

Appendix 2

SYMPOSIUM PEOPLE: PRESENTERS AND FACULTY

CONTENT FACULTY

Susan Bales, MA
FrameWorks Institute

Founder and President, the FrameWorks Institute. A veteran communications strategist and issues campaigner, she has more than 30 years of experience researching, designing, and implementing campaigns on social issues. Her work has been presented at Brandeis, Yale, Rice, and Harvard Universities and at the White House. She served as Vice President for communications at the National Association of Children's Hospitals and founded the Coalition for America's Children. She is a Senior Fellow at the Center on the Developing Child at Harvard University.

William Beardslee, MD
Children's Hospital Boston; Harvard Medical School

Director, Baer Prevention Initiatives; Chairman Emeritus, Department of Psychiatry, Children's Hospital Boston; Gardner Monks Professor of Child Psychiatry, Harvard Medical School. He has a long-standing research interest in the development of children at risk because of severe parental mental illness. He has developed and evaluated several effective prevention strategies for families with parental depression and has served on two Institute of Medicine committees that recently released reports on parental depression and mental health promotion and prevention approaches.

André Corriveau, MD, MBA, FRCPC
Alberta Health and Wellness

Chief Medical Officer of Health for the Province of Alberta, March 2009 to June 2012. Since 2010 he has served as the Provincial/Territorial Co-chair of the Pan-Canadian Public Health Network. He is a member of the Advisory Council of the Canadian Institute of Health Information's Population Health Initiative and of the Advisory Council of the National Collaborating Centres for Public Health. From 1996 to 2009, he served as the Chief Medical Officer of Health for the Northwest Territories. He resumed that position in June 2012.

Michelle Craig, MSLP
Alberta Health Services

Manager, Early Childhood, Health Promotion, Disease and Injury Prevention, Alberta Health Services. She has over 20 years of experience as a clinician, manager, and executive director in public and non-profit sector programs that support child development. She is a Fellow with the Council for Early Childhood Development founded by Dr. Fraser Mustard and is currently the Board Chair for ABC Head Start, an Edmonton non-profit that provides preschool education and family support to more than 300 young children from low-income families each year.

Maureen Devolin, RN, MEd
Alberta Health Services

Manager, Sexual and Reproductive Health, Health Promotion, Disease and Injury Prevention, Alberta Health Services. She has been a nurse for over 25 years and has worked in a variety of roles and settings, from acute care (NICU, labour and delivery) and public health nursing (nurse, vaccine trial nurse/co-ordinator, educator) to managing health promotion, disease and injury-prevention initiatives: Interpretation and Translation Services, Tobacco Reduction, Healthy Babies, 3 Cheers for the Early Years, and, most recently, Sexual and Reproductive Health within Population and Public Health.

Philip Fisher, PhD
University of Oregon; Oregon Social Learning Center

Professor of Clinical Psychology, University of Oregon; Senior Scientist, Oregon Social Learning Center. He is also Science Director for the National Forum on Early Childhood Policy and Programs and a Senior Fellow at the Center on the Developing Child, both based at Harvard University. His work for children in foster care and the child welfare system includes basic research characterizing the effects of early stress on neurobiological systems and areas of the pre-frontal cortex involved in executive functioning; development of preventive interventions; and dissemination of evidence-based practice in community settings. His intervention programs are being implemented at sites throughout the United States and Europe.

Nathaniel Foote, MBA, JD
TruePoint; Center on the Developing Child, Harvard University

Managing Director, TruePoint; Senior Fellow, Center on the Developing Child, Harvard University. For over 30 years, he has helped clients in a wide range of industries improve performance and accelerate growth through more effective strategy development and greater organizational alignment and commitment. He has also led a number of major multi-constituency projects to improve innovation, collaboration, and outcomes in the not-for-profit sector. He is a co-author of *Higher Ambition: How Great Leaders Create Economic and Social Value,* based on a research study including interviews with 36 CEOs.

Nathan Fox, PhD
University of Maryland

Distinguished University Professor, Department of Human Development, University of Maryland College Park. He has completed research on the biological bases of social and emotional behaviour, developing methods for assessing brain activity in infants and young children during tasks designed to elicit a range of emotions. His work is funded by the National Institutes of Health, where he was awarded a MERIT award for the excellence of his research program examining the social and emotional development of young children. He is one of three principal investigators on the Bucharest Early Intervention Project.

Keray Henke, MA
Alberta Education, Government of Alberta

Senior Advisor, Alberta Education, Government of Alberta. An accountant by profession, he joined the Alberta public service in 1980 as a policy analyst in the finance department and has taken on many postings in Executive Council, Municipal Affairs, Children's Services, and, most recently, Education, where he served as Deputy Minister from 2005 to 2012. He recently completed a term as head of the Canadian delegation to the Education Policy Committee of the Organization for Economic Co-operation and Development (OECD) and was chair of the Education Policy Committee from January 2009 to December 2011.

Nathaniel Kendall-Taylor, PhD
FrameWorks Institute

Director of Research, Senior Associate, and Project Director, the FrameWorks Institute (Washington, DC). A medical anthropologist, he employs social science theory and research methods from anthropology to improve the ability of public policy to positively influence health and social issues. His past research has focused on child and family health and on understanding the social and cultural factors that create health disparities and affect decision-making.

Margaret King
Alberta Health and Wellness, Government of Alberta

Assistant Deputy Minister, Community and Population Health, Alberta Health and Wellness, Government of Alberta. She provides leadership and policy development in health promotion, disease control and prevention, wellness strategy development, health surveillance, environmental health, addiction and mental health, and emergency planning and preparedness. She facilitates co-ordinated approaches to improving the health of the public through cross-ministry, cross-government, and stakeholder engagement. Through 19 years in government, she has focused on the use of evidence in the public sector. She has worked as a nurse practitioner in acute care and public health.

Glenda MacQueen, MD, PhD, FRCPC
University of Calgary; Alberta Health Services

Professor, Department of Psychiatry, University of Calgary; Senior Medical Director, Addiction and Mental Health Strategic Clinical Network, Alberta Health Services. Her research focuses on the neurobiology and clinical features of mood disorders. In addition to clinical dimensions of outcome, she examines cognitive function, structural and functional brain changes, and physical health in patients with unipolar and bipolar disorders. She is also interested in understanding whether cognitive and brain changes that occur in major depression and bipolar disorder can be prevented or reversed.

Shannon Marchand
Ministry of Human Services, Government of Alberta

Assistant Deputy Minister, Social Policy Framework, Ministry of Human Services, Government of Alberta. He is leading a team to implement the government's priority of developing a social policy framework that will guide the alignment and redesign of social policy and programs to achieve better outcomes for children and families. Prior to this assignment, he was Assistant Deputy Minister of Workforce Supports, providing leadership and direction for the Province's labour force strategy. In this role he was also responsible for training and employment services, health benefits, child support services, and income support.

Linda Mayes, MD
Yale University

Arnold Gesell Professor of Child Psychiatry, Pediatrics, and Psychology, Yale Child Study Center, Yale University. She collaborated with the department of psychology and with investigators in the Child Study Center and established a laboratory for studying infant learning and attention. She also developed a neurophysiology laboratory for studies of the startle response and related indices of emotional regulation in children and adolescents. She currently oversees the Developmental Electrophysiology Laboratory, which includes dense array electroencephalography as a method for studying brain activity in real time.

Deborah A. Phillips, PhD
Georgetown University

Professor of Psychology and Associated Faculty, Public Policy Institute, Georgetown University. She was the first Executive Director of the Board on Children, Youth, and Families of the National Research Council and the Institute of Medicine and served as Study Director for the Board's report: *From Neurons to Neighborhoods: The Science of Early Child Development*. Her research focuses on the developmental effects of early childhood programs for both typically developing children and those with special needs, including research on child care, Head Start, and pre-kindergarten programs. She has served on many task forces and advisory groups that address child and family policy issues.

Catherine Pryce, MN, RN
Alberta Health Services

Vice President, Addiction and Mental Health Strategic Clinical Network, Alberta Health Services. She is responsible and accountable for providing vision and leadership to a diverse team in the development, design, and implementation of provincial Addiction and Mental Health in support of the vision, mission, and business plan of Alberta Health Services.

Patricia Van Horn, JD, PhD
University of California, San Francisco

Associate Clinical Professor, Department of Psychiatry, University of California, San Francisco. She is Director of the Division of Infant, Child and Adolescent Psychiatry, Interim Director of Child and Adolescent Services, and Associate Director of the UCSF Child Trauma Research Program, all located at San Francisco General Hospital. Her research at the Child Trauma Research Program is with children under six who have witnessed domestic violence and/or experienced maltreatment, and involves investigating the efficacy of relationship-based models for treating the children and their caregivers. She has provided intensive training in Child-Parent Psychotherapy, an evidence-based intervention developed at the Child Trauma Research Program, to clinicians in 27 states and in Israel.

MODERATOR

Peter Butt, MD, CCFP(EM), FCFP
University of Saskatchewan

Associate Professor, Department of Academic Family Medicine, University of Saskatchewan, in a position dedicated to Addiction Medicine. He serves as a consultant to Mental Health and Addiction in the Saskatoon Health Region, where his clinical expertise focuses on IV drug use, community-based interventions, detox, and integrated treatment program development.

ADDITIONAL WORKSHOP FACULTY AND FACILITATORS

Andrea Allen, RN, BScN
Alberta Health Services

Manager, Justice Services and Tertiary Care, Acute and Tertiary Care, Addiction and Mental Health, Alberta Health Services. She has worked with marginalized populations in the inner city of Edmonton in a non-profit, harm-reduction program. In her current position, she supports the enhancement of addiction and mental health programs in correctional and remand centres across Alberta. A key area has been to provide educational sessions to correctional staff regarding addiction and mental health. Along with her team, she has been responsible for the development, implementation, and evaluation of the training.

Amy Astle-Raaen, MSW
Frontiers of Innovation, Washington State

Early Childhood Development Cross Systems Coordinator, Frontiers of Innovation, Washington State. Her position serves as a liaison between agencies including the Department of Social and Health Services (DSHS), the Department of Early Learning, the Department of Health, the Health Care Authority, and Thrive by Five Washington. Previously, she worked as a Performance Management Analyst, co-ordinating early childhood development policy and accountability initiatives in the DSHS.

Marni Bercov, BSW, MA, RSW
Alberta Health Services

Director, Justice Services, Acute and Tertiary Care, Addiction and Mental Health, Alberta Health Services. She has an extensive background working for Alberta Solicitor General in both Young Offenders and Correctional Services Diversion branches. In the non-profit sector, she was involved in management of federal and provincial halfway houses and in establishment of a dedicated residential facility for mentally ill clients no longer under legal sanction. Most recently, she has been responsible for leading the provincial co-ordination, implementation, and evaluation of the provincial forensic psychiatry program and the roll-out of the Safe Communities Grant, which supports the enhancement of Addiction and Mental Health programs in all Correctional Centres across Alberta.

Lisa Cook, PhD
Chinook Primary Care Network

Information Specialist, Chinook Primary Care Network. She has conducted healthcare-related research for over 16 years, working in areas such as neuroscience, multiple sclerosis, dementia, medical imaging, metabolomics, and program- and clinic-specific processes. She has presented her findings at international and national conferences.

Irving Gold, MA, MCA
Association of Faculties of Medicine of Canada

Vice President, Government Relations and External Affairs, Association of Faculties of Medicine of Canada. He is a recognized expert in developing and implementing linkage and exchange strategies that bring researchers and decision-makers together and build decision-maker capacity to use research-informed evidence. He is currently Chair of the Canadian Obesity Network, a Network of Centres of Excellence – New Initiative, and a Steering Committee member of the Mental Health Commission of Canada's Knowledge Exchange Centre.

Carol Gray, RN, BN, MN
Health Care Consultant

She has worked in health care in Alberta for 36 years, leading and working with teams spanning the full continuum of care, including population and public health, seniors' health, community care, urgent care, acute care, inpatient and outpatient care, infection control, primary care, chronic disease management, Aboriginal health, and addiction and mental health. Most recently she was Vice President of Population and Public Health with Alberta Health Services, leading a province-wide program and service. She is now consulting on healthcare projects in Alberta.

Carole Anne Hapchyn, MD, FRCPC
CASA; Glenrose Rehabilitation Hospital; University of Alberta

Program Psychiatrist, Infant Services, CASA Child, Adolescent and Family Mental Health; Medical Director, Autism Clinic, Glenrose Rehabilitation Hospital; Clinical Professor of Psychiatry and Pediatrics, University of Alberta. She provides assessment and treatment for infants and preschool children with mental health and developmental disorders.

Juliet Morrison, PsyD
Washington State

Professional Development Administrator, Department of Early Learning, Washington State. She leads the statewide work focused on building an integrated professional development system for early learning professionals, including implementation of Washington's Quality Rating & Improvement System, Early Achievers. Recently she has been working in partnership with Frontiers of Innovation to include language and developmental indicators addressing executive function in Washington's Early Learning Guidelines for children birth to grade three.

Catherine Peirce, MA
Association of Faculties of Medicine of Canada

Project Manager, e-Learning, Association of Faculties of Medicine of Canada (AFMC). She manages the Canadian Healthcare Education Commons, an online service to support collaborative learning and teaching for healthcare professionals. She also leads the AFMC-Norlien Foundation Addiction e-Learning Initiative. The goal is to identify existing medical education e-learning resources on addiction; commission new pedagogical tools where needed; and improve awareness, evidence-based clinical practice, and models of patient care related to all forms of addiction.

Arlene Weidner, RN, MSc, CHE
University of Calgary

Adjunct Associate Professor, Faculty of Nursing, University of Calgary. She has worked in nursing and healthcare positions as a direct nursing care provider, and in research, education, and administration. She held a number of senior executive positions at the Foothills and General Hospitals. Since 2005, she has had a consulting practice, working on a variety of projects related to health system reviews, nursing issues (effective structures, practice readiness, retention, and recruitment), and addiction and mental health.

JUNIOR FACULTY

Lauren White, MA, PhD Candidate,
University of Maryland, College Park

Appendix 3

SYMPOSIUM PEOPLE: PARTICIPANTS BY FOCUS TEAMS

TEAM 1

FOCUS CHALLENGE: Research Priorities

Exploring the priority needs for research in Alberta that builds upon the content presented in the Symposium and how a research agenda could be developed that supports the needs of the policy and practice arenas.

Karen Benzies, PhD, Professor, Nursing, University of Calgary

Matthew Brown, PhD, Postdoctoral Fellow, Psychiatry, University of Alberta

Xinjie Cui, PhD, MBA, Director, Child and Youth Data Laboratory, Alberta Centre for Child, Family and Community Research

Deborah Dewey, PhD, Professor, Paediatrics and Community Health Sciences, University of Calgary; Director, Behavioural Research Unit, Alberta Children's Hospital

Ayman El-Kadi, PhD, Associate Dean, Research and Graduate Studies, University of Alberta

Troy Harker, PhD, MSc, Fellow in Pediatric Neuropsychology, Stollery Children's Hospital; Assistant Professor, University of New Brunswick - Fredericton

Anita Kozyrskyj, PhD, MSc, Associate Professor and Research Chair, Maternal-Child Health and the Environment, Pediatrics, University of Alberta

Deborah Kurrasch, PhD, Assistant Professor, Medical Genetics, University of Calgary

Frank MacMaster, PhD, Cuthbertson/Fischer Chair in Paediatric Mental Health, University of Calgary

Debbie McNeil, PhD, MSN, Director, Public Health Innovation and Decision Support, Alberta Health Services

Dianna Millard, PhD, Director, School Research and Improvement Branch, Ministry of Education, Government of Alberta

Kara Murias, MD, MSc, Resident Physician, Paediatric Neurology, University of Calgary

Alicia Pawlowski, BSc, MSc, Researcher, Pediatrics, University of Alberta

TEAM 2

FOCUS CHALLENGE: Co-ordination of Education, Justice, Health, and Human Services

Building and leveraging a common science base related to the learnings of the Symposium to guide collaborative problem-solving and innovation across the domains of education, justice, health, and human services generally in order to improve co-ordination among systems and deliver more effective services for children and their families in Alberta.

Judith Barlow, MA, Executive Director, Young Offender Branch, Correctional Services, Alberta Solicitor General and Public Security

The Honourable Ted Carruthers, Family Court Judge, The Provincial Court of Alberta

Dawne Clark, PhD, MA, Director, Centre for Child Well-Being, Professor, Child and Youth Studies, Mount Royal University

Margaret E. Clarke, MD, FRCP, Physician; Professor, Paediatrics and Psychiatry, University of Calgary; Adjunct Professor, University of Alberta

Ruth Collins-Nakai, MD, MBA, Board Member, Muttart Foundation, Alberta Health Services

The Honourable Nancy Flatters, Judge, Provincial Court of Alberta, Calgary Family and Youth Court

Ilene Fleming, Director, United Way of the Alberta Capital Region, Success by 6

Brian Malloy, Executive Director, Access and Early Intervention, Addiction and Mental Health, Alberta Health Services

Dianne McConnell, Director, Early Learning Branch, Ministry of Education, Government of Alberta

Fern Miller, BA, Director, Maternal, Child and Youth Health, Ministry of Health, Government of Alberta

Tim Moorhouse, MA, Assistant Deputy Minister – Recreation and Sport Development, Alberta Tourism, Parks and Recreation

Richelle Mychasiuk, MA, PhD, Canadian Centre for Behavioural Neuroscience, University of Lethbridge

Marni Pearce, PhD, Director, Cross-Ministry Services, Ministry of Education, Government of Alberta

Cathy Pryce, RN, MN, Vice President, Addiction and Mental Health, Alberta Health Services

David Ray, BA, BSW, Manager, Aboriginal Initiatives, Intergovernmental, International and Aboriginal Relations, Government of Alberta

Trish Reay, PhD, Associate Professor, Department of Strategic Management and Organization, School of Business, University of Alberta

Chris Sprysak, CA, BComm, LLB, LLM, Associate Professor, Law, University of Alberta

Lorraine Stewart, PhD, Executive Director, Program Delivery Sector, Ministry of Education, Government of Alberta

Michael Trew, MD, Senior Medical Director, Addiction and Mental Health, Alberta Health Services

Susan Westenberger, BS, Sergeant, Community and Youth Services, Calgary Police Service

Sherri Wilson, BSc, HEd, Executive Director, Policy Innovation and Partnerships, Ministry of Seniors, Alberta Health, Government of Alberta

Sandra Woitas, MEd, Director, Edmonton Public Schools Foundation

Wendy Yewman, MA, Regional Manager, Community Partnerships, Services and Supports, Edmonton and Area Child and Family Services Authority

TEAM 3

FOCUS CHALLENGE: Collaboration Between Academia and Policy and Practice Areas

Encouraging more effective collaboration related to the learnings of the Symposium between academia and the policy and practice areas to benefit children and their families in Alberta.

Lynette Beauchamp, BSW, RSW, Mental Health Coordinator, Edmonton Oliver Primary Care Network, Alberta Health Services

Karen Cotton, BA, BEd, Senior Manager, Mental Health Initiatives, Young Offender Branch, Correctional Services Division, Alberta Solicitor General and Public Security

Carol Ewashen, PhD, Associate Professor, Nursing, University of Calgary

Rose Geransar, Senior Research and Policy Advisor, Enterprise and Advanced Education, Government of Alberta

Gerry Giesbrecht, PhD, Postdoctoral Fellow, University of Calgary

Noella Piquette-Tomei, PhD, Registered Psychologist, Associate Professor, Education, University of Lethbridge

Pattie Pryma, RN, MN, MEd, Associate Professor, Nursing, Mount Royal University

Brent Scott, MD, MSc, Director, Alberta Children's Hospital Research Institute for Child and Maternal Health

Mark Snaterse, BSc Pharm, Executive Director, Addiction and Mental Health, Edmonton Zone, Alberta Health Services

Sherry Thompson, PhD, Senior Transition Lead, Research and Analysis, Alberta Health Services

TEAM 4

FOCUS CHALLENGE: Child Mental Health Policy and Practice

Exploring ways that the learnings of the Symposium could be used to advance policy and practice in children's mental health.

Pierre Berube, MEd, Certified Psychologist, Executive Director, Psychologists' Association of Alberta

Germaine Dechant, RN, MHSA, ICD.D, Chief Executive Officer, CASA Child, Adolescent and Family Mental Health

Jaret Farris, BComm, BScOT, Director, Child, Youth and Family Intervention, Addiction and Mental Health, Alberta Health Services

Karen Ferguson, Assistant Deputy Minister, Ministry of Human Services, Government of Alberta

Maria Filyk, MD, FRCPC, Child and Family Psychiatrist; Lecturer, Medicine, University of Calgary; Clinical Medical Director, Child & Adolescent Addiction and Mental Health Community Services

Rosa Gregory, BSW, RSW, Mental Health Coordinator, Edmonton Oliver Primary Care Network

Carole Anne Hapchyn, MD, FRCPC, Clinical Professor, Psychiatry and Pediatrics, University of Alberta; Program Psychiatrist, Infant and Preschool Services, CASA Child, Adolescent and Family Mental Health; Medical Director, Autism Clinic, Glenrose Rehabilitation Hospital

Warren Henschel, Director, Community and Outreach Services, CASA Child, Adolescent and Family Mental Health

Elaine Hoogewoonink, BA, Program Officer, Knowledge Transfer Initiatives, Alberta Innovates – Health Solutions

Wade Junek, MD, FRCPC, Past President, Canadian Academy of Child and Adolescent Psychiatry; Clinical and Consulting Psychiatrist, Day Treatment Services, Mental Health and Addictions Program, IWK Health Centre

Margaret King, Assistant Deputy Minister, Community and Population Health, Ministry of Health, Government of Alberta

Kimberley Loh, Team Leader, Early Childhood Development, First Nations and Inuit Health, Health Canada

June McCrone-Jenkins, BEd, Aboriginal Programs and Policy Advisor, Intergovernmental, International and Aboriginal Relations, Government of Alberta

Fay Orr, BA, BAA, Mental Health Patient Advocate, Alberta Mental Health Patient Advocate Office

Nancy Reynolds, DOT, BScOT, President and Chief Executive Officer, Alberta Centre for Child, Family and Community Research

Parminder Thiara, MD, FRCPC, Public Health and Preventive Medicine Specialist, First Nations and Inuit Health, Alberta Region, Health Canada

Evelyn Wotherspoon, MSW, RSW, Social Worker, private practice

Bonnie Wright, PhD, RN, MScN, CCHN(C), Evaluation Coordinator, Mosaic Primary Care Network

TEAM 5

FOCUS CHALLENGE: Child and Family Primary Care Practice

The impacts of the learnings of the Symposium on primary care for children and their families in Alberta and how this content could be used to enhance practice.

Carla Atkinson, MD, Child Psychiatrist, Alberta Health Services

Vera Blower, ECED, Manager, Early Learning and Child Care, Calgary and Area Child and Family Services Regional Authority

Nancy Brager, MD, FRCPC, Director, Undergraduate Medical Education in Psychiatry and Associate Professor, Psychiatry, University of Calgary; Chair, Psychiatry Test Committee, Medical Council of Canada

Lisa Burback, MD, Resident in Psychiatry, University of Alberta

Jean Clinton, MD, FRCPC, Associate Clinical Professor, Psychiatry and Behavioral Neurosciences, Child Psychiatry, McMaster University; Associate, Child Psychiatry, University of Toronto

Lisa Cook, PhD, Information Specialist, Chinook Primary Care Network, Alberta Health Services

Greg Eberhart, BSc Pharm, Registrar, Alberta College of Pharmacists

Matt Hicks, MD, PhD, Chief Neonatal Fellow, University of Calgary

Sandra Mintz, MBA, Executive Director, Chinook Primary Care Network, Alberta Health Services

Mark Moland, MA, Director, Knowledge Management, Quality Practice and Partnerships, Alberta Health Services

Tania Oommen, MD, Psychiatry Chief Resident, University of Alberta

Anita Paras, RN, MN, Manager, Health Workforce Division, Ministry of Health, Government of Alberta

Beverley Stich, MD, FRCPC, Clinical Psychiatry Consultant, Edmonton Oliver Primary Care Network; Associate Clinical Professor, Psychiatry, University of Alberta

Danielle Tone, BSW, Improvement Facilitator/Project Coordinator, Chinook Primary Care Network, Alberta Health Services

Lindy VanRiper, MD, Psychiatry Resident, University of Alberta

Jennifer Wells, BSc, BEd, Mediator, Family Justice Services, Ministry of Justice and Solicitor General, Government of Alberta

TEAM 6

FOCUS CHALLENGE: Early Childhood and Intervention Services

Exploring the ways that the learnings of the Symposium could be used to advance policy and practice in intervention and development services for early childhood.

Lori Bokenfohr, LLB, LLM, Partner, Dunphy & Bokenfohr Law Partnership

Casey Boodt, MEdPsych, Evaluation Consultant, CPB Consulting Inc.

Phil Carlton, MEd, Director UpStart, Champions for Children and Youth, United Way of Calgary and Area

Michelle Craig, MSLP, Manager, Early Childhood, Alberta Health Services

Laura Ghali, PhD, Adjunct Professor, Paediatrics, University of Calgary

Daniel Goldowitz, PhD, CMMT, CFRI, Scientific Director, Neurodevelopment Network (NeuroDevNet); Professor, Medical Genetics, University of British Columbia; Associate Director, Trainee Development, Centre for Molecular Medicine and Therapeutics

Deborah Hopkins, BSc, Senior Manager, Early Childhood Development Initiatives, Alberta Human Services

Nicole Letourneau, PhD, Professor and Canada Research Chair, University of Calgary

Nazeem Muhajarine, PhD, MSc, Professor and Chair, Community Health and Epidemiology, University of Saskatchewan

Lillian Parenteau, Chief Executive Officer, Region 10 Métis Settlements Child and Family Services Authority, Alberta Health Services

Tammai Piper, BSc Nursing, Manager, Maternal-Infant Health, Community Health Branch, Ministry of Health, Government of Alberta

Marnie Robb, MEd, PhD, Senior Policy Advisor, Aboriginal Relations, Government of Alberta

Sandi Roberts, MEd, ECD, SafeCom Leader - Education, Safe Communities and Strategic Policy, Justice and Attorney General, Government of Alberta

Diane Shearer, BSW, Senior Manager, Family Justice Services, Ministry of Justice and Solicitor General, Government of Alberta

Kesa Shikaze, BScOT, Project Manager, Community and Population Health Division, Ministry of Health, Government of Alberta

Wadieh Yacoub, MD, Medical Officer of Health and Director, Health Protection, First Nations and Inuit Health, Alberta Region, Health Canada; Clinical Assistant Professor, Public Health and Community Health Sciences, University of Alberta and University of Calgary

Appendix 4

FOCUS TEAM PLANS

Six Focus Teams were formed at the 2012 EBBD Symposium by merging the original Learning Teams around their common Focus Challenges. Each of the groups collaboratively completed a set of questions called the Learning Team Compass to guide their future interaction and support of each other. The following are combined excerpts from the six Learning Team Compasses.

Focus Team members have identified the following strengths and assets within Alberta's research, policy, and practice communities as they pertain to the science of early brain and biological development in Alberta:

AHS has research capacity

Alberta Initiative for School Improvement

Child and Youth Data Lab

Alberta Centre for Child, Family & Community Research

The Norlien Foundation

New Social Policy Framework and opportunity for researchers to influence it

New Education Act that was informed by research

Strategic Clinical Networks that are going to involve researchers, practitioners, partners, families, Alberta Health, foundations, and NGOs

Early learning and inclusion initiatives in education

A shared current, relevant, and accessible body of knowledge:

- Harvard Center on the Developing Child
- Alberta Family Wellness Initiative (AFWI)
- FrameWorks Institute

Openness to transformative change at various levels across the province

- Social Policy Framework development
- Creating Connections – AAMH Strategy
- Safe Communities

Engagement of community stakeholders to inform policy

Increased importance of research in informing policy

Cross-ministry initiatives

Engagement of Alberta Health Services

Diverse representation in EBBD

Commitment to knowledge mobilization

Growing engagement of communities

Primary Care Networks/Family Health Clinics

Alberta Innovates – Health Solutions

Parenting After Separation seminar – core story fully incorporated

Focus Team members have identified the following areas for continued collaboration beyond the Strategy (with each other or other Symposium participants):

Shared conferences and provincial forums already in place in the province.

Continued collaboration among Success by 6, UpStart, and EDI.

Staying involved with and participating in the Alberta Social Policy Framework.

Grandmother Wisdom.

Integration of EBBD into all strategies, policies, frameworks in our individual areas.

The strengths of our Focus Team members (resources, networks, experience, and knowledge) that we can leverage in support of the above include:

We represent cross-sectional, cross-disciplinary applied research; leadership roles within organizations; and external expertise in clinical community practice. We are well-connected and collaborative.

Diversity and understanding of one another's roles and influence.

Backgrounds in university, not-for-profit agencies, rural and urban communities, ACH service delivery (programs), ACH and provincial government policy, and ECD networks. Knowledge of how to co-ordinate research, practice, and policy. Individual expertise, contacts, and institutional relations.

The Alberta Family Wellness Initiative (AFWI) website, our collective websites and embedded resources, our spheres of influence.

We are a wide and varied group with many skills and networks, many shared projects.

Appendix 5

Additional resources, knowledge-transfer reports, policy documents, organizations, websites

Each of the resources featured below is available online at no cost. Note that this is not an exhaustive list.

1. A Science-based Framework for Early Childhood Policy: Using Evidence to Improve Outcomes In Learning, Behavior, and Health for Vulnerable Children. (2007). Boston, MA: Center on the Developing Child at Harvard University.

Available from:

http://developingchild.harvard.edu/index.php/resources/reports_and_working_papers/policy_framework/

2. Adverse Childhood Experiences (ACE) Study. Centers for Disease Control and Prevention, Government of the United States.

Available from: http://www.cdc.gov/ace/index.htm

3. Alberta's Health Research and Innovation Strategy. (2010). Edmonton, AB: Government of Alberta, Alberta Health and Wellness.

Available from: http://www.advancededucation.gov.ab.ca/media/277640/ahris_report_aug2010_web. pdf

Highlights document available from: http://www.advancededucation.gov.ab.ca/media/277579/final%20ahris%20highlights%20sheet-high-res%20(no%20cover,%20no%20bleeds).pdf

4. Child Maltreatment Report 2011. (2012). U.S. Department of Health and Human Services, Administration for Children and Families, Administration on Children, Youth and Families, Children's Bureau. Rockville, MD: Author.

Available from: http://www.acf.hhs.gov/programs/cb/stats_research/index.htm#can

5. Creating Connections: Alberta's Addiction and Mental Health Strategy. (2011). Alberta Health Services, Government of Alberta.

Available from: http://www.health.alberta.ca/documents/Creating-Connections-2011-Strategy.pdf

6. Depression in Parents, Parenting, and Children: Opportunities to Improve Identification, Treatment, and Prevention. (2009). National Research Council and Institute of Medicine. M. J. England & L. J. Sims (Eds.). Washington, DC: National Academies Press. (Can read entire book online at no cost.)

Available from: http://www.nap.edu/catalog.php?record_id=12565

7. Early Brain & Biological Development: A Science in Society Symposium. Summary Report. (2010). Calgary, AB, Canada: Norlien Foundation.

Early Brain & Biological Development: A Science in Society Symposium. Summary Report. (2011). Calgary, AB, Canada: Norlien Foundation.

Both available from: http://www.albertafamilywellness.org/resources/search

8. From Neurons to Neighborhoods: The Science of Early Childhood Development. (2000). Shonkoff, J. P., & Phillips, D. A. (Eds.). Washington, DC: National Academies Press.

Available from: http://www.nap.edu/openbook.php?isbn=0309069882

9. Healthy Development: A Summit on Young Children's Mental Health. Partnering with Communication Scientists, Collaborating Across Disciplines and Leveraging Impact to Promote Children's Mental Health. (2009). Washington, DC: Society for Research in Child Development.

Available from: http://www.apa.org/pi/families/summit-report.pdf

10. Let's Talk About the Early Years: Report by the Chief Medical Officer of Health. (2011). Alberta Health and Wellness, Government of Alberta.

Available from: http://www.health.alberta.ca/about/OCMOH-reports.html

11. Positive Futures - Optimizing Mental Health for Alberta's Children and Youth: A Framework for Action (2006-2016). (2006). Alberta Health and Wellness. Edmonton, AB: Author.

Available from: http://www.health.alberta.ca/documents/Mental-Health-Framework-Child-06.pdf

12. Preventing Child Maltreatment: A Guide to Taking Action and Generating Evidence. (2006). World Health Organization & International Society for the Prevention of Child Abuse and Neglect. Butchart, A., Harvey, A. P., Mian, M., & Furniss, T. Geneva: WHO.

Available from: http://whqlibdoc.who.int/publications/2006/9241594365_eng.pdf

13. Preventing Child Maltreatment: Program Activities Guide. Centers for Disease Control and Prevention. Atlanta, GA: Author.

Available from: http://www.cdc.gov/ViolencePrevention/childmaltreatment/index.html

14. Preventing Mental, Emotional, and Behavioral Disorders Among Young People: Progress and Possibilities. (2009). A consensus report from the Committee on the Prevention of Mental Disorders and Substance Abuse Among Children, Youth and Young Adults. National Research Council and Institute of Medicine. Washington, DC: The National Academies Press.

Available from: http://www.iom.edu/Reports/2009/Preventing-Mental-Emotional-and-Behavioral-Disorders-Among-Young-People-Progress-and-Possibilities.aspx

15. Recovery from Addiction: A Science in Action Symposium. Summary Report. Volume 2. (2011). Calgary, AB, Canada: Norlien Foundation.

Recovery from Addiction: A Science in Action Symposium. Summary Report. Volume 4. (2012). Calgary, AB, Canada: Norlien Foundation

Both available from: http://www.albertafamilywellness.org/resources/search

16. Report of the Surgeon General's Conference on Children's Mental Health: A National Action Agenda. (2000). U.S. Public Health Service. Rockville, MD: Department of Health and Human Services.

Available from: http://www.surgeongeneral.gov/topics/cmh/childreport.html

17. Strengthening Benefit-Cost Analysis of Early Childhood Interventions: Workshop Summary. (2009). National Research Council and Institute of Medicine. Beatty, A.; Committee on Strengthening Benefit-Cost Methodology for the Evaluation of Early Childhood. Washington, DC: The National Academies Press.

Available from: http://www.nap.edu/catalog/12777.html

18. Talking About Child Development and Children's Mental Health in Alberta. (2011). Washington, DC: Developed by the FrameWorks Institute for the Alberta Family Wellness Initiative supported by the Norlien Foundation.

Available from: www.frameworksinstitute.org/toolkits/alberta/, user name and password: fw

19. The Foundations of Lifelong Health Are Built in Early Childhood. (2010). Boston, MA: Center on the Developing Child at Harvard University.

Available from: http://developingchild.harvard.edu/library/reports_and_working_papers/foundationsof-lifelong-health/

20. Transformative Neurodevelopment Research in Mental Illness: Report of the National Advisory Mental Health Council's Workgroup. (2008). Bethesda, MD: National Institute of Mental Health.

Available from: http://www.nimh.nih.gov/about/advisory-boards-and-groups/namhc/

neurodevelopment_workgroup_report.pdf

21. Unclaimed Children Revisited: The Status of Children's Mental Health Policy in the United States. (2008). Cooper, J. L., Aratani, Y., Knitzer, J., Douglas-Hall, A., Masi, R., Banghart, P., & Dababnah, S. New York: National Center for Children in Poverty.

Available from: http://nccp.org/publications/pdf/text_853.pdf

22. Why Your DNA Isn't Your Destiny. Cloud, J. (2010, Jan. 6). Time magazine.

Available from: http://www.time.com/time/health/article/0,8599,1951968,00.html

GLOSSARY

Addiction – Addiction is a primary, chronic disease of brain reward, motivation, memory, and related circuitry. Dysfunction in these circuits leads to characteristic biological, psychological, social, and spiritual manifestations. This is reflected in an individual pathologically pursuing reward and/or relief by substance use and other behaviours. Addiction is characterized by inability to consistently abstain, impairment in behavioural control, craving, diminished recognition of significant problems with one's behaviours and interpersonal relationships, and a dysfunctional emotional response. Like other chronic diseases, addiction often involves cycles of relapse and remission. Without treatment or engagement in recovery activities, addiction is progressive and can result in disability or premature death. *The American Society of Addiction Medicine*

Amygdala – Part of the brain that performs a primary function in the processing of memory, fear, and emotional reactions.

Anxiety – A multi-system response to a perceived threat or danger. It reflects a combination of biochemical changes in the body, the patient's personal history and memory, and the social situation.

Autonomic Reactivity – Reactivity within the sympathetic or para-sympathetic branches of the autonomic nervous system not subject to voluntary control. Autonomic reactivity is used as a measure of stress susceptibility because of its role in mobilizing biological systems during fight-or-flight responses to perceived threats.

Brain Architecture – The basic architecture or physical structure of the human brain is constructed through an ongoing process that begins before birth and continues into adulthood. Like the construction of a home, the building process begins with laying the foundation, framing the rooms, and wiring the electrical system in a predictable sequence. Early experiences literally shape how the brain gets built; a strong foundation in the early years increases the probability of positive outcomes. A weak foundation increases the odds of later difficulties.

Brain Faultlines – A metaphor used to describe scientific knowledge about how addictions occur. Faultlines can appear as the brain develops, often due to toxic stress, or people may have been born with brain faultlines. Just as faultlines can set off earthquakes, faultlines in the brain can affect brain architecture.

Brain Plasticity – Capacity of the brain to change structure, function, or organization of neurons in response to experience. This ability persists throughout the lifetime, but specific types of plasticity are age dependent.

Chronic Disease Management Model – A healthcare delivery model currently used to manage chronic diseases such as diabetes and hypertension and gaining favour for treating addiction. The goal is to keep patients healthier and disease-free for as long as possible through screening and early detection, multi-disciplinary and holistic care teams, patient education and self-care, and ongoing case management.

Core Story – A knowledge-translation technique from the FrameWorks Institute. A core story defines a topic in a consistent way, prioritizes the scientific knowledge, identifies the key points, and removes unnecessary detail. A good core story unifies the many messages from the scientific community into a single storyline with several basic themes. This simpler model can be used to create a link between scientific findings and policy.

Cortisol – A steroid hormone produced by the adrenal cortex that regulates carbohydrate metabolism and maintains blood pressure. Cortisol is released in response to stress, acting to restore homeostasis. However, prolonged cortisol secretion due to chronic stress can have negative effects on development and far-reaching health effects into adulthood.

Depression – A psychiatric condition involving a primary disturbance of mood that affects a person's thoughts, feelings, behaviours, and physical functioning. Symptoms include feelings of sadness, hopelessness, worthlessness, anxiety, guilt, irritability, fatigue, and pain that persist for a significant period of time.

Epigenetics – The study of heritable changes in gene expression due to mechanisms other than changes in the underlying DNA sequence. A gene is basically like any other molecule in the cell and thus is subject to physical modifications. Collectively, these modifications can be considered as an additional layer of information that is contained within the genome and are referred to as the epigenome (from the Greek "epi" meaning "over" and genome).

Executive Function – A set of cognitive abilities that control and regulate other abilities and behaviours. Executive functions include planning and decision-making, abstract thinking, rule acquisition, and cognitive flexibility.

Positive Stress – Positive stress is moderate and short-lived, and is an important and necessary contributor to healthy brain development. It can help motivate individuals to accomplish tasks and achieve goals.

Pre-frontal Cortex – A part of the forebrain that is involved in executive functions such as working memory, decision-making, planning, and judgment.

Randomized Controlled Trial – A study in which participants are assigned at random to receive one of two or more clinical interventions, including one or more controls. A control is a standard of comparison, which may be a placebo, a standard intervention, or no intervention.

Scaffolding – Scaffolding is a metaphor for the support caregivers provide for children as they develop and learn new skills.

Secure Attachments – Strong, positive, and trusting emotional attachments formed between infants and their caregivers.

Serve and Return – The metaphor of a game of tennis used in the core story of brain development to describe the positive interaction between a child and caregiver required for healthy development.

Stress Response System – A set of organs and specialized nerve cells in the brain responsible for initiating the fight-or-flight function of the autonomic nervous system within seconds in response to a perceived threat, leading to biobehavioural changes including acceleration of heart and respiratory rates, sweat production, and other physiological changes.

Tolerable Stress – Tolerable stress is a severe form of stress, but it occurs in the context of supportive relationships that help buffer its effects and facilitate adaptive coping. Tolerable stress does not produce long-lasting damage to the body.

Toxic Stress – Intense, long-lasting, or uncontrollable stress occurring in the absence of supportive relationships to buffer its effects. In children, toxic stress can occur as a result of unpredictable home environment, abuse, or being cared for by a parent who is addicted or mentally ill. Toxic stress in the early years of life damages the developing brain and can lead to lifelong problems in learning and behaviour, and increased risk for physical and mental illness.

Ventrolateral Cortex – This region of the brain mediates some of the cognitive responses to negative emotions, such as depression and anxiety.

Appendix 6

REFERENCES BY FACULTY PRESENTATION

KING AND PRYCE – Alberta's Addiction and Mental Health Strategy

Alberta Health Services, Government of Alberta. (2011). Creating connections: Alberta's addiction and mental health strategy September 2011. http://www.health.alberta.ca/documents/Creating-Connections-2011-Strategy.pdf

Health Quality Council of Alberta. (2005). Alberta quality matrix for health: User guide. http://www.hqca.ca/assets/pdf/User%20Guide%20R290506.pdf

MACQUEEN – Addiction and Mental Health Strategic Clinical Network in Alberta Health Services

Alberta Health Services. (2011). Strategic Clinical Networks: Development update (August 16, 2011). http://www.albertahealthservices.ca/hp/if-hp-phys-strategic-clinical-networks-dev-update.pdf

Alberta Health Services. (2012). Alberta Health Services: Strategic Clinical Networks. A primer & working document (August 7, 2012 – V5). http://www.albertahealthservices.ca/Strategic%20Clinical%20Networks/ahs-scn-primer.pdf

BALES AND KENDALL-TAYLOR – It Takes a Lot to Break a Guessing Machine: Translating the Neurodevelopmental Science of Addiction to Reframe Early Child Development

Bales, S.N., & Gilliam, F.D., Jr. (2004). Communications for social good. New York: The Foundation Center. http://foundationcenter.org/gainknowledge/research/pdf/practicematters_08_paper.pdf

Erard, M. (2011). Cracks in the brain: Enhancing Albertans' understanding of the developmental causes of addiction. Washington, DC: FrameWorks Institute.

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Simon, A. (2011). Can redirecting values increase support for addiction policies and related issues? Washington, DC: FrameWorks Institute.

FISHER – Applying Knowledge About How Stress Affects the Developing Brain to Improving Outcomes for Adopted, Foster, and Other Maltreated Children

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Fisher, P. A., & Gunnar, M. R. (2010). Early life stress as a risk factor for disease in adulthood. In R. A. Lanius, E. Vermetten, & C. Pain (Eds.), The impact of early life trauma on health and disease (pp. 133-141). Cambridge, UK: Cambridge University Press.

Fisher, P. A., & Kim, H. K. (2007). Intervention effects on foster preschoolers' attachment-related behaviors from a randomized trial. Prevention Science, 8, 161-170.

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