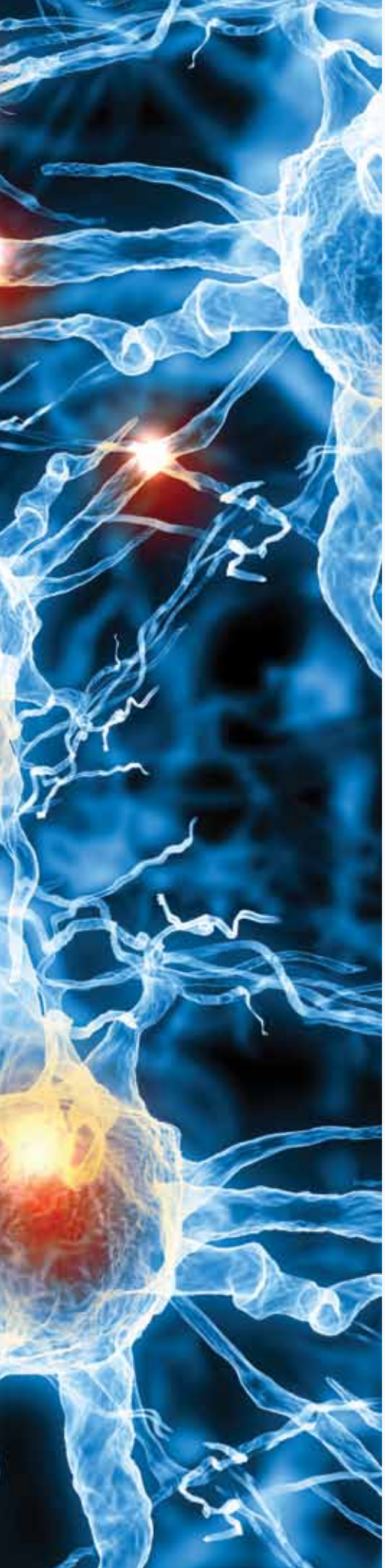

VOLUME 6

Recovery from Addiction:
A Science in Action Symposium

Summary Report

OCTOBER 22-26, 2012 BANFF, ALBERTA, CANADA

Alberta family wellness initiative

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Purpose of Report

This report is the sixth 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.

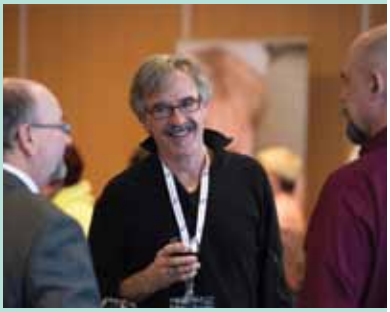
Writer/Editor
Marylu Walters, MSc, Edmonton, AB

Welcome

Improving the lives of children and families in Alberta has been informed for the past three years by twin knowledge-mobilization strategies supported by the Alberta Family Wellness Initiative (AFWI). Now in their final year, the Recovery from Addiction (RFA) strategy and the parallel Early Brain & Biological Development (EBBD) strategy have brought a wealth of knowledge, experience, and perspectives to support better outcomes for children and families in the province.

The passion, commitment, and high calibre of the participants in both strategies have been exceptional. Participants in the RFA strategy are now in a prime position to advance the knowledge they've gained to improve outcomes for people struggling with, or at risk for, addiction and to address the implications of addiction and mental health problems for individuals, their families, and society as a whole. The AFWI's two-pronged initiative recognizes the intergenerational impact of addiction and toxic stress on the developing brain and the need to involve both parents and children in prevention, intervention, and treatment programs to achieve success. Eventually, by innovating, we believe that we can prevent problems before they occur. During the RFA and EBBD Symposia and in the intervening months, participants have worked individually and together to apply what they've learned to what they do in their own spheres of professional activity. The expanding uptake of Symposia learnings in Alberta policy and practice shows that our collective efforts are already bearing fruit. People are speaking the same language across disciplines and finding common ground. There is much work still to be done. I look forward to the merger of our twin initiatives into a unified strategy at our joint Symposium in Edmonton, October 28 through November 1, 2013.

Nancy Mannix, JD, Chair & Patron, Norlien Foundation



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The Core Story of Early Child Development and Addiction

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, strongly or weakly, to support subsequent development. 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 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.

How do genes and environments interact? 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, like exposure to violence, abuse, or neglect, 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.

THE 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.

What derails development? Toxic stress is the adversary in the story of child development, but other forms of stress are normal parts of life. 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 or addiction 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, cognitive impairment, and addiction 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 have happened or addictions have developed to prevent

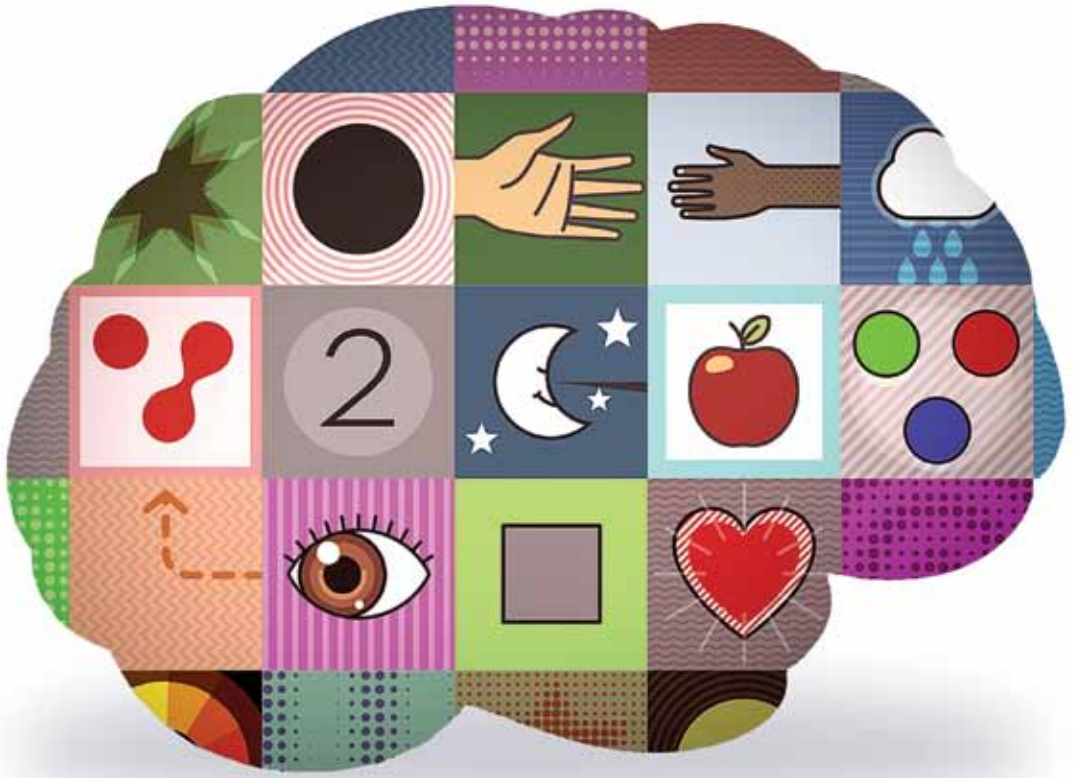
ALBERTA FAMILY WELLNESS INITIATIVE

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 the development of healthy families in Alberta.

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 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 appropriate and timely interventions in situations of parental addiction or other mental health problems, or by 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.

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

"This has been one of the most exciting knowledge mobilization strategies that I've been involved in in my career. The intensity of it and hard work but also the repeated exposure and the opportunity to hear some of the leading researchers in addiction and in early childhood development have been just amazing. This has changed the dialogue across Alberta between providers and between organizations."

CATHERINE PRYCE, RN, MN
ALBERTA HEALTH SERVICES

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 nearly three years in action, the AFWI's meta-strategy is making an impact within Alberta and beyond.

The AFWI model calls for three 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

"This is a model for everybody else to emulate, and I think of it as having several key aspects. The first is to bring experts in to provide a knowledge base for a wide spectrum of people that deal with children's issues. The second is to work with policy makers to institute policies on how early childhood is handled from several different perspectives, in health care and at the sociological level. Last is the big effort being made to make this information universally available. This combination of approaches is likely to change the face of Alberta, and I think we're going to see the influence of that over the next 20 years as kids grow up in Alberta."

JUDY CAMERON, PHD
UNIVERSITY OF PITTSBURGH

early childhood development, mental health, and addiction across society, from academics, health, and education to justice and human services.

At the RFA Symposia, participants receive the latest knowledge in early childhood and brain development, child mental health, addiction, and treatment strategies, delivered by leading scientists and change leaders from across North America and beyond. In 2010, participants were organized into 16 small cross-disciplinary Learning Teams, each concentrating on one of 11 different Focus Challenges, such as integration of services across the continuum of care, clinical and professional education and training, and prevention and early intervention. 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 also provide participants with hands-on workshops on framing the scientific knowledge into a common core story of early child development. In these workshops, participants learn 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 through November 1, 2013.

Initiative Makes Significant Impact

One RFA Symposium and one EBBD Symposium were held each year in 2010 and 2011, and a third EBBD Symposium took place in the spring of 2012. The first Symposia began a process for understanding the factors that contribute to healthy development, the factors that can derail development and lead to risk for physical and mental health problems and addiction, 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

"You've created something over three years that is really distinctive. It's hard to find this kind of linkage between science, policy, and practice anywhere. You have a special opportunity now."

JAMES RADNER, MPHIL
UNIVERSITY OF TORONTO

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 situations affecting 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. In fact, 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 healthcare 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

"This is one of the most important, useful, and reproducible experiments that I know about. I talk about Alberta all the time when I'm speaking to policy makers, when I'm speaking to researchers. You guys are putting things into practice. You're doing the real hard work of figuring out what the science is and how it will fit – in families, in schools, in health care, and in the budget. Yours will be the proof of the conceptual ideas that are surrounding all kinds of U.S. healthcare efforts and European healthcare efforts."

THOMAS MCLELLAN, PHD
UNIVERSITY OF PENNSYLVANIA

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.

System-Wide Changes Underway

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. Personal and group actions reported by participants illustrate the tremendous amount of work being undertaken in Alberta aimed at integrating the knowledge into systems, influencing professional development and curriculum development, and ultimately making a difference for individuals and families struggling with or at risk for mental health problems and addiction. A summary of key initiatives includes:

1. **Policy:** Efforts to integrate Symposia knowledge into committee work, strategic plans, policy briefs, and external communications in government, national policy and professional organizations, and Alberta Health Services (AHS).
2. **Program Development:** Efforts to incorporate Symposia knowledge into new and existing programs for professional development and practice.
3. **Research/Academic:** Conference presentations, research projects, and university- and college-based curriculum development related to Symposia knowledge.
4. **Practice:** Efforts to incorporate Symposia knowledge into practice settings and non-programmatic professional development.

Some specific developments include:

- Use of the AFWI website for curriculum development and academic programs.
- Studies on factors related to workplace productivity, including addiction issues.
- Work with Strategic Clinical Networks (SCNs) to use Symposia information and evidence in the development of clinical pathways for adult and adolescent depression and for addiction. Adult depression pathway rolled out across the province; adolescent depression pathway being piloted in Sherwood Park; addiction pathway under development.
- Knowledge from the EBBD and RFA Symposia embedded in the Chief Medical Officer of Health policy document *Let's Talk About the Early Years.*
- Work on the Integrated Justice Service plan, which launched in Calgary in

"The job of those of us who are advocates and others who are experts is to contest discourse that is problematic or just patently untrue. I think the fact that people in entirely different fields – criminal justice and health and early child development and addiction treatment – can all talk to each other and tell each other stories in such a way that the narrative has a structure that they all recognize, and can bring their own areas into, is an enormous asset."

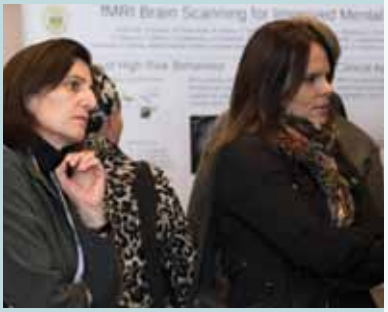
SUSAN NALL BALES, MA

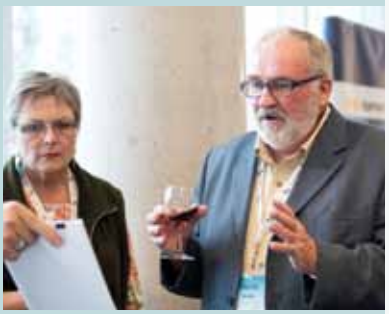
February 2012, for chronic offenders with addiction and mental health problems – offering a one-stop centre for employment and housing services, addiction counselling, parole officer visits, and individual and family therapy.

- Work with the Solicitor General on the importance of trauma-informed work using appropriate cultural tools in Aboriginal communities.
- Work on level two of the PCCLS (Provincial Concurrent Capable Learning Series) incorporating various interventions for addiction, based on materials from the AFWI website.
- Hosting of one-day workshops, based on concurrent disorders information from the Symposia and focusing on neurobiology, trauma-informed care, chronic disease management, and Aboriginal issues.
- Development of a five-day clinical foundation certification program for addiction and mental health staff to transform how they deal with addiction and concurrent issues.
- Policy focused on ensuring that prevention and clinical services are available for addiction and mental health counselling at newly developing Family Care Clinics.
- Academic focus looking at how universities can provide more education in the areas of addiction and mental health in fields such as social work and psychology.
- Cochrane mental health clinic co-locating with the local addiction facility, resulting in increased concurrent capabilities.
- Increasing general awareness and sensitivity regarding the Adverse Childhood Experiences (ACE) Study and issues around the chronic disease management model.
- Research looking at use of the ACE questionnaire in primary care.
- Family Care Clinics taking more responsibility for addiction and mental health.
- Train the Trainer initiative in primary care focusing on various addiction and mental health issues.
- Work toward introducing the AFWI materials into Alberta university curricula, with emphasis on the undergraduate level. There has already been a substantial increase in knowledge of addiction and mental health, and early brain and biological development, at this level.
- Work to create a learning module for homecare managers on addiction, using the AFWI website as a resource.
- Implementation by AHS of the Alberta Access Improvement Measure (AIM), looking at every aspect of service from intake process to rearranging waiting room furniture, making more drop-in appointments available, and increasing weekday hours. Results already show a reduction in the no-show rate and an increase in clients served.

RFA 2012 Executive Summary

The third and final Recovery from Addiction (RFA) Symposium was held October 22-26, 2012, at The Banff Centre. Thought-provoking presentations on neuroscience and addiction by prominent researchers and clinicians from across North America were shared with participants. In addition, Alberta leaders provided an overview of progress being made to bring evidence-based innovation and change to research, policy, and practice aimed at improving health and societal outcomes for Albertans.





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 participants had been engaged with the RFA initiative since 2010 and were reconvening for their third RFA Symposium. A number of observers from Canada and the United States were also present. The Symposium opened with a video featuring participants recounting how they had successfully incorporated learnings from the 2010 and 2011 Symposia into their work. The range of their activities and variety of settings in which they work underscored the breadth and depth of the Alberta Family Wellness Initiative's (AFWI) reach across the province. Some examples included:

- Use of common language – including concepts such as toxic stress and brain architecture – has helped professionals from health, education, justice, and other service areas to work together, for example in the development of Strategic Clinical Networks (SCNs).
- Videos on the AFWI website have been used as a resource to help mental health and other health professionals understand addiction risk factors, treatment, and models of care.
- Information from the Symposia has spread to the business sector, where some employers are looking at the chronic disease management model of addiction treatment with respect to employees.
- Alberta's corrections system is shifting from a medical model to a trauma-informed chronic care model of treatment for inmates with addiction.

New this year was a reception and poster session on the first evening. Several participants illustrated their research and other activities related to RFA and Early Brain and Biological Development (EBBD) concepts.

Morning plenary sessions featured expert presentations on current research in addiction, with a focus on the neuroscience of addiction and its implications for intervention and treatment; system innovation, performance measurement, and process improvement; and progress on changes taking place in policy, programming, and research in Alberta with respect to mental health and addiction and related services. Smaller faculty workshops and interdisciplinary cohort sessions focused on developing a deeper understanding of the science and its implications for policy and practice in Alberta. Learning Teams 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 the goals they have been working on and what needs to be done in Alberta to further those goals.

Foundational Knowledge

The Symposium began each day with presentations by the Faculty – 16 distinguished scientists, researchers, clinicians, policy developers, and change leaders from across the United States and from within the Alberta research, health, 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 updated participants on changes taking place in the Alberta context. Presenters described progress on implementation of Alberta's Addiction and Mental Health Strategy, development of a Social Policy Framework for Alberta, establishment of a new model of health research funding and management for Alberta, and formation of Strategic Clinical Networks (SCNs), with emphasis on priorities for the Addiction and Mental Health SCN.

2. Day 2 focused on healthy children and healthy communities. Presentations on the core story of brain development and the effect of toxic stress on children's brains and behaviour examined brain plasticity, the combined influence of genes and environment on brain development, toxic stress and the buffering effects of supportive relationships, and the importance of early intervention. The effects of early trauma on neurobiology and relationships in adult life, including codependency, were discussed and a comprehensive treatment model was presented.

3. Presentations on Day 3 linked neuroscience to clinical practice. Understanding the neurobiology of addiction – how the reward and stress systems and executive functioning are altered in the addictive process – can provide insights into identifying vulnerability and novel treatments for addiction. These include psychological interventions, which imaging studies have shown can be effective in changing brain function at certain stages of treatment; and interventions for substance-using mothers, with a focus on helping the parents better understand their own responses to the parenting role as well as the needs of their infants.

4. On the fourth day, presenters focused on strategies for accelerating innovation, measuring and improving performance, and creating and sustaining change, with particular reference to the Alberta context. A framework for creating science-driven social innovation developed by the Frontiers of Innovation Community, founded by the Harvard Center on the Developing Child, was outlined. Strategies were provided for setting realistic goals and using performance measurement effectively to reduce substance use problems in school, healthcare, and justice settings. A case study of the Network for Improvement of Addiction Treatment (NIATx), a successful process-improvement model for behavioural health care, provided a step-by-step process for making, disseminating, and sustaining change.

Implications for Policy and Practice

Scientific knowledge of the neurobiology of addiction has profound implications for everything from screening and intervention to treatment and continuing care. Behaviour and imaging studies show distinct changes in function and structure in the brains of addicted individuals. This knowledge lends support, if any was still needed, to the definition of addiction as a disease of the brain. It also suggests new avenues for identifying vulnerability to addiction, new options for choice and timing of interventions, and new ways to monitor treatment progress. This is just one example of the information about addiction that needs to be incorporated into the training and professional development curricula of the healthcare workforce and the human services workforce in general.

Alberta's system transformation is gaining momentum. A new Social Policy Framework is nearing completion, and implementation of Alberta's new Addiction and Mental Health Strategy is underway. Participants focused their attention at this Symposium on how they could use the networks and knowledge they have developed through the RFA process to facilitate implementation and further the penetration of the science into policy and practice within Alberta's complex system. As the change process moves from strategy and action plan to implementation and daily practice, many challenges remain. For example, if primary care will be responsible for screening, brief interventions, and referrals, linkages must be made throughout the continuum of care to ensure seamless referral and follow-up. 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.

To track system performance and take corrective action when needed, it is essential to specify measurable goals, a strategy for producing those goals, and a small set of performance measures for monitoring progress. Alberta has done considerable groundwork in this area and now needs to streamline its goals and indicators for effective performance management as it integrates mental health and addiction into the larger healthcare system.

Communicating the Science

A major component of the AFWI strategy is the development of a common language that can be used across disciplines and with the general public to communicate clearly about the science of early childhood and brain development, mental health, and addiction. 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 beyond. At RFA 2012, the FrameWorks Institute introduced a new explanatory metaphor to the core story to deal with popular concepts of resiliency as an innate trait and addiction as a matter of willpower, both of which torpedo conversations about how people are shaped by exposure to adversity and helped by positive community environments. Based on extensive research, the metaphor of the "resilience scale" explains development as a scale with positive factors on one side and negative factors on the other. For every child, the fulcrum, or balance point, starts in a different place and can slide based on experiences over time. Incorporating this metaphor into the core story about the early roots of addiction adds one more powerful piece to the toolbox for reframing this issue.

Resources

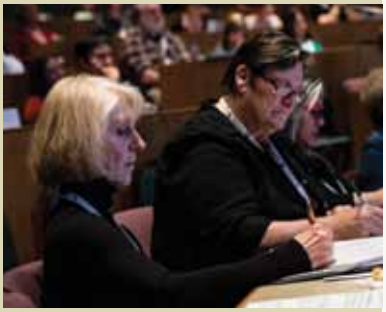
The AFWI website (http://www.albertafamilywellness.org/) provides a portal for accessing a wide range of resources on early brain and biological development, child mental health, and addiction, geared specifically to researchers, healthcare professionals, front-line professionals, policy makers, and 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, a collection of current Working Papers from the National Scientific Council on the Developing Child, and reports from FrameWorks on how Albertans think about these issues. 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

Learning Team members created Personal Action Strategies with timelines for actions they plan to take, goals they hope to achieve, and strategies for taking their RFA learnings to the next level as they move forward beyond the Symposia. The two AFWI strategies will merge in a combined Symposium October 28 through November 1, 2013.

PART 1

Introduction



Participant engagement is a defining feature of the Alberta Family Wellness Initiative's (AFWI) interdisciplinary knowledge-mobilization strategy. Participant activities in each of the Recovery from Addiction (RFA) Symposia and Early Brain & Biological Development (EBBD) Symposia were designed to build powerful learning communities that can benefit the lives of children and their families in Alberta.

The 2010 RFA Symposium focused on laying the foundation for a common understanding of how early experiences are biologically embedded and how interaction with the environment can influence development of addictive disease. The 2010 Symposium was designed to help participants recognize early childhood experiences as significant factors in addiction, acknowledge addiction as a family disease that can present in multiple modalities and take multiple paths to recovery, and apply the chronic disease management model to addiction treatment. The 2011 RFA Symposium focused on application of knowledge by identifying opportunities to apply a neurodevelopmental framework to addiction and mental illness prevention; explore the implications of applying neuroscience to addiction intervention and treatment models; and create awareness of the need for family supports in addiction treatment and recovery. The 2012 RFA Symposium updated participants on the latest neuroscience-informed research and clinical practices in addiction and oriented them to current policy frameworks and strategies in Alberta. This Symposium focused participants' attention on their own roles in realizing change and supporting innovative approaches to addiction research, policy, and practice in Alberta.

The exceptional 80% return rate of participants throughout the RFA initiative confirms that engagement has occurred. The key messages are taking hold:

1) Addiction is a chronic disease of the brain influenced by the interplay of genetic and environmental factors.

2) Addiction includes both substance-related addiction, such as abuse of alcohol or drugs, and process addiction, involving problematic use of sex, gambling, food, or other behaviours.

3) Early childhood experiences matter: toxic stress in early childhood is a significant risk factor.

4) Management of risk factors depends upon the capacities of parents, caregivers, and communities.

5) Addiction affects the entire family, is often transmitted from generation to generation, and therefore requires a family-centred approach to treatment.

6) Effective treatment requires a chronic disease management approach and evidence-based programs and services along a continuum of care.

The energy and ideas generated at the 2012 RFA Symposium inspire confidence that these messages will continue to penetrate. Most important, participants' engagement over the three-year RFA initiative is already bearing fruit and will make a difference in the lives of Albertans for generations to come.

PART 2

FOCUS CHALLENGES FOR LEARNING TEAMS

Research Priorities (Team 1)

Co-ordination of Research, Policy, and Practice Areas (Teams 2 & 3)

Integration of Services Across the Continuum of Care (Teams 4 & 5)

Integration of Evidence Across Service Settings (Team 6)

Primary Care Practice Settings (Teams 7 & 8)

Clinical and Professional Education and Training (Teams 9 & 10)

Prevention and Early Intervention (Team 11)

Enhancing Treatment or Developing Specialized Services (Teams 12 & 13)

Quality Improvement (Team 14)

Client Outcomes (Team 15)

Chronic Disease Management Model (Team 16)

Alberta Health Services, South Zone (Team 17)

The Symposium Experience

Participants in the Alberta Family Wellness Initiative's (AFWI) three-year Recovery from Addiction (RFA) strategy have explored cutting-edge research, shared their expertise, and engaged in activities that will encourage new ways of communicating and working together across their varied disciplines. Building upon the knowledge generated over the previous two years, the 2012 RFA Symposium set the foundation for participants to move forward as a multi-disciplinary community of purpose.

2012 Symposium Objectives

The 2012 RFA Symposium oriented participants to current policy frameworks and relevant strategies in Alberta, as well as the latest research and clinical practices in addiction. Key objectives of the Symposium were to help participants:

- Explore Alberta's policy platforms and identify opportunities to build on current strategies and integrate new knowledge into priority initiatives.
- Identify the sequence of actions necessary to bring scientific principles into key areas of research, policy, and clinical practice in addiction in Alberta.
- Identify what it would take to ensure that the changes required are realized.
- Encourage dialogue and collaboration within a multi-disciplinary community in order to develop and support innovative approaches to addiction research, policy, and practice in Alberta.

The Learning Process

Each day of the Symposium was organized around a theme corresponding to key areas of research, practice, and policy, including a focus on progress being made within Alberta. Presentations and discussions took place in a variety of group settings throughout the week.

GUEST PANEL REPRESENTATIVES

Susan Barker, PhD
Vice Provost, Student Experience
University of Calgary

Lesley Brown, PhD
Associate Vice President, Research
University of Lethbridge

John Cowell, MD, MSc, CCFP, FRCPC
Chief Executive Officer
Health Quality Council of Alberta

Chris Hosgood, PhD
Dean, Faculty of Health Sciences
University of Lethbridge

Dean Lindquist, MA, EdD
Assistant Deputy Minister
Learning Supports & Information Management
Alberta Education

Roger Moses, MA, RPsych
President
Psychologists' Association of Alberta

Mary-Anne Robinson, BN, RN
Chief Executive Officer
College and Association of Registered Nurses of Alberta

Hon. Dave Rodney, BEd
Associate Minister of Wellness
Government of Alberta

Kurt Sandstrom, QC
Assistant Deputy Minister
Alberta Justice and Solicitor General

Tracy Wasylak, BN, MSc
Vice President, Strategic Clinical Networks & Clinical Pathways
Alberta Health Services

Plenary Sessions

Morning plenary sessions provided participants with knowledge related to addiction prevention, intervention, and treatment, and ways to support quality in systems and services. Plenary speakers launched the learning process each day with presentations of leading-edge research on early brain development and addiction, evidence-based interventions linking neuroscience to clinical practice, and strategies for mobilizing change to improve outcomes for individuals and families affected by addiction. Plenary sessions also included overviews of Alberta's new policy frameworks and changes taking place in the province in areas related to early child development, addiction and mental health, and human services. Participants engaged with presenters in question-and-answer dialogue leading to smaller group discussions that followed.

Interdisciplinary Cohort Discussions

Interdisciplinary cohort sessions allowed participants to reflect on the plenary presentations in facilitated discussions with a diverse community of their peers in the areas of research, policy, and clinical practice. Cohorts discussed new information from the morning's presentations, explored opportunities to apply the knowledge in the Alberta context, and discussed potential opportunities and challenges involved in application.

Reception, Poster Session, and Networking Dinner

New this year was a poster session and reception prior to the networking dinner on the first evening of the Symposium. Twelve participants shared information on projects in which they were engaged, including the Collaborative Assessment and Treatment for Children's Health (CATCH) wraparound model of care integrating infant and preschool trauma assessment and intervention services in Alberta; a study based on physician billing and ambulatory and inpatient/emergency data sets suggesting evidence of system-based stigma in the hospital treatment of physical disorders of children and adolescents with psychiatric disorders; a study of the relationship between addictive behaviours, mental health, and worksite culture, such as job stress, job value, attitudes, and unpredictable work; and the Grandmother Wisdom project, which offers parenting advice that combines science and tradition in Aboriginal communities.

DAILY CONTENT THEMES

Day 1
Alberta's Environment: Context for Change

Day 2
Healthy Children and Healthy Communities

Day 3
Linking Neuroscience to Clinical Practice

Day 4
Measuring and Mobilizing Change

Day 5
Putting Science into Action

Charlene Hellson, Co-ordinator for Alberta Health Services' Honouring Life: Aboriginal Youth & Communities Empowerment Strategy, made a special presentation at the networking dinner. Her moving theatrical monologue, "Unpacking the Backpack," told the story of historical trauma in the lived experience of a First Nations woman and her journey to wellness.

Faculty Workshops

On the second, third, and fourth afternoons, Faculty presented workshops that gave participants the opportunity to deepen their learning in particular areas of Symposium content. Faculty workshops expanded on the morning presentations and provided examples of current interventions or applications of the knowledge base. Workshops included discussions on treating sex addiction and the complexities of trauma utilizing a team approach; the interplay between early brain and behavioural development; translating the neurobiology of addiction to treatment; brain abnormalities in people with addiction and common co-morbid conditions and how therapeutic interactions can change brain function; addiction e-learning for undergraduate medical education; measuring performance at the population, system, and case levels in Alberta; evaluating the Alberta Family Wellness Initiative; and how to predict and improve the chances of successful change.

Learning Team Sessions

In 2010, participants were organized into 16 Learning Teams representing 11 different areas of focus, from research priorities and primary care practice settings to quality improvement and client outcomes. A 17th team was created in 2011. The teams met each day to explore new information and discuss how they would sustain the knowledge they had gained and the networks they had created with their team members over the previous two years. They also worked on team presentations to be made on the final day of the Symposium.

"This has been a great opportunity to hear the best evidence from research first-hand by experts in the field in a way that is easy to translate into policy, practice, and research. I came in a different capacity each time, and it doesn't matter: there is takeaway no matter where you are." **PARTICIPANT**

Learning Team Presentations

The Symposium concluded on the morning of the final day with brief presentations by the Learning Teams to the full Symposium audience and a special guest panel of high-level academic, policy, and government leaders in Alberta. Teams used skits and other presentation devices to illustrate issues they had explored, needs they had identified, progress made in Alberta, goals still to be achieved, and plans for moving forward to apply knowledge gained through the RFA strategy. Plans included building a prevention community of practice in the AHS South Zone, including creation of stronger prevention tools such as the Simple Connections . . . Stronger Kids program, which reminds adults that they can have a powerful influence in small ways on the positive development of children and youth; looking at ways to close the gap between the understanding of mainstream health service professionals and the public about addiction and expert knowledge about addiction as a chronic disease; working to increase public understanding of the relationship between adverse childhood experiences and addiction; addressing the need to establish a simplified dashboard of performance indicators for measuring progress in each strategic direction of Alberta's Addiction and Mental Health Strategy and Action Plan; working to get the core story of early child development and addiction into judicial skills training; and work underway to replicate original Adverse Childhood Experiences (ACE) Study findings in the Alberta setting and develop a treatment protocol for use in primary care settings for patients with high ACE scores.

Participants and Observers

Among the 106 active participants, over 80% were reconvening for their third RFA Symposium, representing an extraordinary retention rate for the strategy as a whole. In addition, observers were present from across Canada and the United States.

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 and corrections systems, health practitioners, clinicians, researchers, and representatives of numerous professional bodies and organizations and community organizations. (See Appendix 3 for a list of participants by Learning Teams.)

A large majority of the participants have remained engaged in the three-year initiative since its beginning in 2010. Between Symposia, they have continued to communicate with 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.

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 RFA Symposium was made possible by the support of the following sponsoring partners:

- Norlien Foundation
- Government of Alberta
- Alberta Health Services
- 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 3

Foundational Knowledge

Plenary presentations at the third Recovery from Addiction (RFA) Symposium focused on the core story of early brain and child development and the neurobiology of addiction; changes underway in approaches to research, policy, and practice relevant to addiction and mental health in the Alberta context; and strategies for accelerating innovation and creating sustainable systemic change, with take-home messages pointing the way ahead for Alberta.

The Foundational Science

Presentations on the core story of brain development, brain plasticity, and the effects of toxic stress on children's brains and behaviour emphasized why early experiences matter. Early trauma in its many forms – from sexual and physical abuse to the less noticed traumas of loneliness and emotional neglect – influences a person's neurobiology and cognitive, social, and emotional development. This, in turn, affects his or her ability to manage stress and develop and maintain healthy relationships, which sets the stage for future addiction. Behavioural and imaging studies of how the brain is altered with various forms of experience have illuminated the neurobiology of addiction and provide new insights into prevention, innovative and timely intervention, and ways to monitor treatment progress.

Abstract:

THE CORE STORY OF BRAIN DEVELOPMENT

By Judy Cameron, PhD

From the beginning of life, experience influences brain development. The brain and how it will function throughout the lifespan – controlling cognition, emotion, and physical health – is a product of both genes and early experiences working together. Healthy child development is the foundation for educational achievement, economic productivity, responsible citizenship, and lifelong health, leading ultimately to successful parenting of the next generation, strong communities, and a healthy economy.

Early experiences matter. Experience changes how a child develops cognitively, emotionally, and physically, and it starts very early. As soon as children start talking, differences appear between those whose parents or caregivers spend time with them interacting, reading, and conversing and those who receive very little individual attention and consequently spend more time watching television. The vocabulary of a child in the former situation develops well as a result of the positive adult interaction, while the vocabulary development of a child in the latter environment is slower. This is just one example of how differences in children's early experiences and environment influence differences in their brain development. Early experiences can also affect lifelong health. Numerous studies have shown a direct correlation between adverse childhood experiences, such as neglect or abuse, and risk for disease in adulthood. For example, the odds ratio of having adult cardiovascular disease increases directly with the number of adverse childhood experiences in a person's life.

Concept #1: Brains and skills are built over time. Early experiences and genes affect the architecture of the maturing brain. Genes provide the basic blueprint, but experiences shape the processes that establish either a sturdy or weak foundation for all the learning and behaviour that follow. The brain starts with a large number of neurons, and over the first three years a large number of connections form between them. The connections that get used strengthen and stay; those that don't get used much are pruned away. The child who is read to and receives adult attention is strengthening neural circuits for language development, reasoning, and making associations. The other child will be disadvantaged in this area but will have strengthened different circuits.

Concept #2: Brain plasticity – the ability to change behaviour – decreases over time. Different regions of the brain control different functions and mature at different rates. Neural circuits are wired in a bottom-up sequence, from those involved in vision and hearing to those involved in higher cognitive functions. The latter develop more slowly and are pruned away more slowly. There's an early period of plasticity in each system during which experiences can shape development and behaviour for good or ill and during which interventions can be most effective. In terms of policy, this means the earlier the intervention, the greater the rate of return on investment in human development.

Concept #3: Serve and return is a key ingredient in the learning process. Social interactions are essential. Young children naturally reach for interaction through babbling, facial expressions, and gestures. Children learn best when an attentive, responsive adult is engaged with them in the learning process, paying attention to what interests the child, and showing and explaining things to him or her. These serve-and-return interactions are essential for the development of healthy brain circuits.

Concept #4: Toxic stress in the early years of life can derail healthy development. Learning how to cope with moderate, short-lived stress can build a healthy stress-response system. Chronic stresses, such as neglect, abuse, severe maternal depression, or extreme poverty, can have long-term consequences for a child. Ongoing stress repetitively activates and strengthens brain circuits that respond to stress and activate stress hormones that can modulate brain-circuit activity. The stress system remains on high alert, weakening other developing brain circuits. Caring adults can serve as a buffer and prevent the effects of stress from being toxic.

Keys to healthy development include a balanced approach to emotional, social, and cognitive development starting in the earliest years; supportive relationships and positive learning experiences that begin with parents but are strengthened by others outside the home; and highly specialized interventions as early as possible for children and families experiencing significant adversity.

"If you experience adverse childhood experiences when you're little – let's say you grow up with a parent who has an addiction – you are more likely as an adult to also have an addiction, and you're more likely to have lots of problems. You're more likely to have a mental health disorder such as depression. You're more likely to have cardiovascular disease. You're more likely to have slow development. But the sad thing is you're more likely to develop your own addiction and, in that way, an addiction can be trans-generational. The child is exposed to the behaviour of the parent, and that lack of attention sets them up for having an addiction of their own." **Judy Cameron, PhD**

Abstract 2:

The effect of toxic stress on children's brains and behaviour

By Judy Cameron, PhD

Stress can be harmful, tolerable, or beneficial, depending on how much of a bodily stress response it provokes, how long the response lasts, and what social supports the child has to help him or her deal with the stress. Early life stress does three things to the brain that can affect development throughout life: it changes stress-hormone secretion, alters the development of neural connections, and changes gene expression.

To understand the biology of adversity, it is important to differentiate the three levels of stress. Positive stress causes brief increases in heart rate and mild elevations in stress-hormone levels. This short-term acute stress is beneficial and helps develop circuits that enable a person to deal with everyday stresses. Tolerable stress provokes serious yet temporary stress responses and can be buffered by supportive relationships. Toxic stress causes a prolonged activation of stress-response systems in the absence of protective relationships. Buffering can come from family members or from other caring adults who play a significant role in a child's life. There are many ways society can put buffers in place to help children deal with life stresses.

What are sources of toxic stress in young children? Data from a number of studies show that, out of 1,000 children, about 75 will experience maltreatment, mainly from neglect. In an additional 130 out of 1,000 children, toxic stress results from things happening to the parents, such as postpartum depression, so that the child is not getting enough positive interaction. In 136 cases out of 1,000 children, toxic stress can be attributed to parental substance abuse, again resulting in decreased attention to the child. Parental substance abuse is now a dominant cause of toxic stress in western nations.

The long-term impacts of toxic stress in early life are many. Studies show that the number of adverse childhood experiences (ACEs) is directly related to risk for developmental delays and other negative child outcomes. In addition, risk factors for adult substance abuse, adult depression, and adult heart disease are embedded in adverse childhood experiences. In the case of substance abuse, parental substance abuse influences interaction with the child and sets the child up for adult substance abuse, propagating the problem from generation to generation. Intervention is imperative. ACEs also change how a person sees the world. Research subjects were shown pictures of a face with a series of expressions morphing from angry to fearful, or angry to sad, and were asked at what point the facial expression changed from angry to fearful or sad. People who had not experienced early life adversity perceived the switch to be in the middle of the series. Those who had experienced early life adversity thought the face continued to look angry even after the expression became predominantly fearful or sad. Seeing more anger in the world changes how a person views life and has a big impact on adult health and functioning.

How does stress impact the brain? Studies on monkeys show that early life experiences have lasting effects on brain development. Monkeys separated from their mothers at one week, one month, or three months show different behavioural outcomes. Monkeys that experienced separation at one week grew up with a long-term deficit in social interactions. Microarray studies of the monkeys' amygdala, an important part of the brain regulating anger and emotion, showed radical change in the expression level of 200 genes. Animals that experienced separation at one month did not show a profound decrease in social interaction, but rather actively sought social interactions as they developed. They, too, experienced changes in amygdala gene expression, but different genes were affected. Early life experiences don't change the structure of the genes; they change the action of regulatory proteins that bind to DNA and turn the expression of genes on or off. Through this process, called epigenetic change, they leave lasting chemical "signatures" on genes.

We can prevent long-term health impacts of early life stress through timely intervention. In monkey studies, surrogate monkey mothers (caring adults) were introduced to the infants at varying times after they were separated from their mothers, from immediately to three months after separation. The immediate intervention was very effective and remediated both behaviour and gene expression. Intervention at three months had no effect. Interventions work, but they work best if they occur early, during the period of plasticity.

The message is clear. The earlier adversity is experienced, the more impact it will have on development and behaviour. Implementing preventive interventions that provide buffers can change toxic stresses to tolerable stresses. This means significant adversity can be experienced but it won't disrupt a positive health trajectory. Early matters.

"Relationships matter: they change how children's brains develop. Early intervention can prevent long-term consequences of social bond disruption, but the timing is important when thinking about policy." **Judy Cameron, PhD**

Abstract:

THE COMPLEXITIES OF TRAUMA: Defining, Identifying, and Treating

By Brenda Garrett, RN, MC, LPC, CSAT and Marcus Earle, PhD, LMFT, CSAT

Trauma, in its broadest definition – from sexual and physical abuse and war to the less noticed cumulative trauma of loneliness, taunting, or parental inattention – influences our neurobiology, sets the stage for addiction, and impacts our relationships with ourselves and others throughout life. Identifying and treating trauma involves a complex process aimed at peeling back the façade a person has hidden behind, rediscovering the original vulnerable child within, and learning how to nurture oneself to become a healthy, connected adult.

Our brain is wired for fight, flight, or freeze (F3) when faced with a perceived threat. When fear or anxiety takes over, the more primitive part of the brain automatically kicks into this F3 mode. This is the first response for a normal brain in crisis, but it can undermine the development of healthy relationships. A healthy person is able to switch control of reactions over to the neo-cortex, the more advanced part of the brain, which processes information and makes decisions. Traumatized children can develop other automatic first responses: submissiveness based on a feeling of shame, or neediness based on fright. Understanding one's automatic reaction to threat is a starting point for working with oneself and working better with others.

When talking about trauma, it is helpful to use a broad definition. Big T traumas – war, natural disaster, and sexual and physical abuse – are things that everyone agrees are traumatic. Little T traumas – neglect, hurtful words, loneliness – accumulate, start to define a person, and create new behavioural pathways. This process often goes unnoticed because children cope, adapt, and manage fairly well, up to a point. From the point of view of Marilyn Murray's Scindo Syndrome trauma model, we all start as an Original Feeling Child: energized, connected, curious, and spontaneous. A split takes place when difficult things – Big T or Little T – happen. On one side is the Sobbing Hurting Child, who takes the pain; on the other is the Controlling Child, who stands up to adversity by putting on a façade. The aim of treatment is to integrate the best parts of both sides – empathy and compassion and the ability to cope – to become a more energized, more fluid, and more productive, healthy, balanced person.

When doing reparative work with adults it is necessary to go back and look at the child within. Children learn to thrive and trust in environments of love, acceptance, and encouragement. If we ignore, humiliate, and don't protect them, they emotionally anaesthetize themselves, setting the stage for future addiction. If they don't receive proper treatment as children, they will either re-traumatize themselves in adulthood or traumatize the people they love. They may blame or shame others or themselves, be passive-aggressive, or medicate addictively, remaining emotionally blunted in their adult relationships. The emotional suffering of shame – the sense of being defective – reflects an incomplete individuation process that occurs in childhood and dampens the ability to self-define, self-protect, and self-contain as adults.

One of the complex manifestations related to trauma is codependency. Codependency is characterized by maladaptive caretaking behaviours. It begins with shame, is seeded in childhood, and is the gateway for future addiction. As children of traumatic events, codependents lack the coping skills they need to master their emotions and instead try to control their external world. They make it their business to care for others, but don't know how to care for themselves. Codependency may look like compassion but differs from compassion in critical ways. Compassion is helpful giving with no agenda about the outcome. Codependency is about hurtful helping, about wanting to control an outcome, about doing things for other people that they need to be capable of doing on their own. Codependents' inner sense of vulnerability leads to emotional hypervigilance, resulting in subtle control and manipulation of others. When a stress occurs, it can trigger a new cycle of shame, kicking a person from a shame-based, passive, co-operative façade to unexpected aggression, which in turn leads to more shame and contributes to the medicating behaviours of addiction.

Treatment for adults who were traumatized and shamed in childhood is aimed at uncovering the real self. Children of trauma never really get in touch with that self. Without treatment they may press on but never really reach their full potential. The goal of therapy is to break down the façade and get the person to focus on him- or herself. Treatment is complex and should include a cognitive component as well as an experiential component. A team approach is vital, because one therapist cannot meet all the needs of one client.

"Codependency is an emotionally progressive disease that exists on a continuum, and its seedings begin in childhood. It is the centre stage as we see it for the making of and the groundwork for future addiction." **Brenda Garrett, RN, MC, LPC, CSAT**

Abstract:

NEUROBIOLOGY OF ADDICTION: A Reward-Deficit, Stress-Surfeit, and Executive-Function Disorder

By George F. Koob, PhD

Conceptualizing addiction as a disorder that includes elements of impulse control disorders and compulsive disorders to produce excessive drug intake provides a framework with which to identify the neurobiological and neuroadaptive mechanisms involved in addiction. Three key neurobiological elements are decreases in reward function, sensitization of brain stress systems, and disruption of pre-frontal executive function, providing a powerful impetus for the compulsive drug-seeking behaviour associated with addiction. Understanding the neuroadaptations in the reward, stress, and executive-function systems will provide new insights into identifying vulnerability to addiction and novel treatments.

It is useful to look at addiction as a three-component cycle: a pre-occupation/anticipation (craving) stage, a binge/intoxication stage, and a withdrawal/negative affect stage. In this framework, two sources of reinforcement combine to become a powerful influence on drug-seeking behaviour: positive reinforcement associated with a drug's euphoric effects during the early stages of drug use, and negative reinforcement (where removal of an aversive stimulus increases the probability of a response), which kicks in during the development of dependence. Key neurochemical and brain circuits are involved in this transition. This cycle appears to also hold for non-substance addictions, although neurochemical evidence for this is not yet established.

Initial drug-seeking behaviour begins and habits are laid down in the basal ganglia, or reward system, of the brain. This structure contains most of the brain's dopamine. It orients us toward stimuli in the environment (incentive salience) that are important for survival and as such produce positive reinforcement – a burst of dopamine that feels good – when we find them. While a natural reinforcer like sex or food produces a 20-30% release of dopamine, crack cocaine produces a 400% increase. Alcohol and opioids act in an equally powerful way on the nucleus accumbens to release neuropeptides called endorphins, which also activate the reward system and shut off the amygdala and provide relief from stress. This is how drugs of abuse usurp the reward system and orient behaviour toward drug-related stimuli.

As excessive release of neurotransmitters and activation of receptors occurs, the brain adjusts. When a person becomes addicted, the reward transmitters no longer produce the hedonic response, and the negative effects of withdrawal set in: there is a reduction in dopamine activity and a change in endorphin receptors that blunts the effect of any natural release of endorphins. This is a reward-deficit disorder. But there is also a stress-surfeit disorder being recruited. The stress system is directed by another neuropeptide called corticotrophin-releasing factor (CRF), which activates glucocorticoids, including cortisol, via the hypothalamic-pituitary-adrenal (HPA) axis. Glucocorticoids are steroid hormones that energize the body's peripheral systems to allow fight or flight in the face of perceived threat. But in alcoholism and in chronic stress disorders, the extrahypothalamic (amygdala) CRF stress systems also become sensitized, meaning that more CRF is released in response to stress than normal, and that lower amounts of stress produce CRF release. This provides another explanation for the reward-deficit disorder and stress-surfeit disorder: the CRF system in the brain is supersensitive. This is illustrated in work involving rodents that have acquired alcohol dependence through subjection to intermittent alcohol vapours. During withdrawal from alcohol vapours, the animals will self-administer two to three times as much alcohol, work harder for the alcohol, and show greater relapse following prolonged abstinence. They also show dramatic decreases in reward function, increases in anxiety-like behaviour, and huge increases in CRF in the amygdala. In fact, all drugs of abuse increase and sensitize CRF systems in the amygdala.

Thus, a simplistic view of addiction is that it involves not only a reward-deficit disorder, but a stress-surfeit disorder with CRF playing a prominent role. In terms of the motivational aspects of addiction, under normal developmental conditions, a person has a robust reward system and a quiescent stress system. When a person becomes addicted, the condition is reversed: positive reinforcement is lost and negative reinforcement takes over. The brain is changed dramatically.

The frontal cortex of the brain, responsible for executive function, is also under investigation in the field of addiction. This is the system responsible for working memory, planning, and decisions – where choices are made to engage certain habits and behaviours and to inhibit other habits and actions that are not desired. It can be argued that the pre-frontal cortex, which keeps the reward system in the nucleus accumbens and the stress system in the amygdala under control, may be compromised earlier in the addiction process than previously thought. In animals, it appears that this system is very sensitive to binge cocaine use and binge alcohol use and may be contributing to loss of executive function, which controls self-regulation.

By using animal and human studies to understand these neuroadaptations in the reward, stress, and executive-function systems, it may be possible to translate some of this basic research in a way that can be of heuristic value for identifying vulnerabilities and designing novel treatments for addiction.

"The neurobiology of addiction has profound implications for everything from treatment to recovery to vulnerability, but the critical part here is that anyone who tries to argue that addiction is a moral problem or a choice problem is missing the key point: it's a brain disease. The brain has changed and you have to get your brain back to deal with addiction." **George F. Koob, PhD**

Abstract:

CHANGING THE BRAIN WITH THERAPY

By Glenda MacQueen, MD, PhD, FRCPC

Addiction, including the process addictions, is associated with measurable changes in several brain structures. Imaging studies have demonstrated normalization in a number of brain areas following treatment of addiction and co-morbid conditions. Psychological treatments are also effective at changing brain function and activity. Behavioural and imaging studies have examined how the brain is altered with illness and with treatment.

Patients arrive at the emergency room at different stages of illness, and with different histories of substance use. By observing a patient's behaviour and emotional state in the context of his or her substance use history, it is possible to understand which functions of the brain may be impaired and which treatment options would be appropriate and effective at the time. For example, a patient actively using crack cocaine for a considerable length of time, having a history of trauma and depression, and arriving in an unfocused, agitated state would not be amenable to a psychotherapy intervention at that point in care. The patient's history and behaviour would indicate a disruption of the frontal cortical control and reward mechanisms (responsible for planning and impulse inhibition) and limitations in the ability of the hippocampus and frontal regions to modulate the amygdala, creating a state of anxiety, craving, and negative affect. The person would likely have deficits in attention and planning, and a scan would likely show differences in connectivity in the brain compared to a healthy person.

Psychotherapy, done properly, can change the brain. Another patient, who arrives suffering the effects of an alcohol binge, might be a candidate for a short-term psychological intervention such as motivational interviewing, if the patient is not highly agitated or anxious, is able to engage from a cognitive perspective, and is willing to consider that alcohol is a problem. Motivational interviewing aims at increasing the client's awareness of the problems and risks that result from his or her behaviour and motivating him or her to make changes. A study in which problem drinkers underwent brain scans before and after they tried motivational techniques, and likewise before and after they engaged in simple talking sessions, showed different patterns of brain activity associated with alcohol craving after the motivational interviewing but not after the simple talk sessions. Studies of this type underscore the importance of using evidence-based psychotherapy: if psychotherapy is not done properly, it may fail and the patient may blame himself or herself for "failing" the therapy.

Is it possible to retrain brains impaired by long-term alcohol abuse? Even with long-term abstinence, there may remain distinct signatures in some brain regions that differentiate the brains of people who had once consumed alcohol excessively from those who had not. The hippocampus is known to be vulnerable to the long-term effects of alcohol abuse, and one result is impairment in short-term memory. There is no definitive evidence yet regarding the efficacy of retraining following cognitive impairment due to alcohol abuse. However, studies on people with depression who suffer mild cognitive problems have provided some evidence that it is possible to improve performance using certain brain games, and scans show changes in the hippocampus regions associated with retraining. It will be important to know whether or not cognitive faculties, such as short-term memory, are being restored as patients move through therapy for addictions.

Is it possible, with appropriate therapies, to prevent addiction? Adolescence, roughly from puberty to age 25, is a critical window of opportunity for prevention. It is the period when high-risk behaviours that could lead to addiction begin. Stress-related conditions such as depression and anxiety often predate or occur with these behaviours. Studies are beginning to show that prevention may be possible with therapy. Exposure therapy has been shown upon follow-up to effect changes in brain activity and behaviour in cases of anxiety. Cognitive Behavioural Therapy (CBT) has also been shown effective for depression. Long-term psychotherapy has shown evidence of effecting changes in brain activity in people who had early experiences of neglect or trauma. There are now ways to monitor changes in brain function through the whole range of evidence-based psychological treatments, from motivational interviewing through longer-term psychotherapy, and therefore to understand why various treatments are indicated at specific phases of recovery.

"For both pharmacological interventions and psychological therapies, we need a much better understanding of how we match our patient to our treatment. Even within one person, a therapy might not be well suited to that person for a particular stage of his or her illness, but there might be another stage in treatment where that therapy is appropriate and will deal effectively with one or more aspects of recovery. So we need to match patients with treatments, but we also need to match treatments with the patient at the right time in that person's illness." **Glenda MacQueen, MD, PhD, FRCPC**

Abstract:

How addiction impacts parenting: Implications for Intervention

By Linda C. Mayes, MD

Early toxic stress compromises not only children's cognitive and emotional development but also their ability as adults to care for the next generation. This has important implications for interventions for children and their parents and for working with addicted adults who are parents.

The science of parental attachment has relatively recently begun looking at how becoming a parent impacts adults' psychological and neuropsychological development. Becoming a parent is a developmental process. The presence of a new baby activates the neural circuitry that is involved in the balance between reward and stress, and increases the dedication of these circuits toward caring. Adaptive parenting requires key capacities such as self-control, emotional regulation, decision-making, consequence appraisal, and reflective or mindful capacities toward oneself and the child. All of these capacities have a neurocognitive basis.

Human studies using brain imaging are converging with findings from animal models involving "care circuits." EEG studies show a heightened auditory brain wave component in mothers compared to non-mothers for both infant cries and other auditory stimuli. Mothers also exhibit a greater electrophysiological brain response to images of distressed babies compared to fathers and non-parents, as well as activation in regions of the brain involved in reward, when shown images of their own babies' happy faces. Studies show a correlation between a mother's positive perception of her infant at two to four weeks postpartum and an increase in grey matter by three to four months postpartum. In fMRI tests, parents and non-parents had differing responses to low- and high-distress cries: parents showed activation in regions of the brain that are involved in motor responses, suggesting that when a parent hears his or her baby cry, he or she is already thinking about how to reach out.

Attachment security appears to be one source of individual differences in the transition to parenthood. Parents who experienced security in their early relationships show a much greater reward-related response to their baby's cues than insecurely attached parents. Secure parents have a greater activation in the reward region of the brain, while insecure parents have greater activation in a region of the brain involved in regulating negative emotions. Thus, individual differences in parenting behaviour – i.e., how children are cared for – convey individual differences in stress-reward systems in offspring, enduring into adulthood and affecting the next generation. The Adverse Childhood Experiences (ACE) Study shows that the more ACEs a person experiences the more likely he or she is to report alcoholism and illicit drug use in adulthood. Addicted adults who experienced childhood maltreatment perceive greater stress and use more avoidant coping strategies, including drug use, in response.

What are the implications for parenting? For parents who are addicted, caring for an infant may be less rewarding and more stressful in a neurocognitive way. Addiction reduces parental sensitivity to infant cues and enhances parental stress. Studies of substance-using mothers have shown a reduction in grey matter that correlates with self-reports of impaired bonding with their infants. Substance-using mothers also show decreased brain reactivity to infant facial cues and auditory cues, as well as lower levels of oxytocin in response to infant cues, relative to non-substance-using mothers. In the face of infant distress, substance-using mothers tend to respond with withdrawal, inattention, irritability, and possibly even abuse, thus perpetuating an intergenerational cycle of neglect and abuse. These responses could be markers of drug use, but they could also be thought of more broadly as markers of heightened stress when faced with a baby. In the addictive process, the drug has become a way of reducing stress, and stress reduction becomes rewarding. The reward system has been co-opted. This is likely the mechanism for the common clinical observation of increased drug use or relapse after the birth of a baby.

What are the implications for intervention? Two complementary approaches that focus on parenting have been used effectively in providing services for substance-abusing mothers: increasing parental mentalization, or the ability to think about the needs of both self and child; and building strong social support networks that help parents raise their children. Mentalization focusing on how the demands of caring for an infant are stressful and impact understanding of an infant's needs helps modulate the stress of caring for a baby. Mentalization has been used in novel interventions, such as Mothering from the Inside Out, in parallel with traditional substance use treatment, with dramatic results. Another program, Mental Health Outreach for Mothers (MOMS), reaches young substance-using mothers by delivering services in places where young mothers congregate, such as laundromats and supermarkets. It is important that services for adults as parents are integrated with services for their children within the same agency. This offers the opportunity to impact multiple generations and especially the parenting by those children when they become adults.

"There's a very common clinical observation of increased drug use or relapse after the birth of an infant. It's not just that there's an increase in stress, but that there's an actual mechanism for this dysregulated neural system underlying parenting. And if we think this way, we can either amplify the intervention focus on decreasing drug use and improving parenting, or you can flip it around so that by improving parenting, you might actually have an impact on drug use." **Linda C. Mayes, MD**

The Alberta Lens

Alberta is undergoing significant systemic changes designed to improve the health and mental well-being of the population across the province. Alberta's Addiction and Mental Health Strategy, a cross-ministry collaborative effort to provide the necessary addiction and mental health services and supports across the continuum of care, was released in 2011 and is in its first year of implementation. A Social Policy Framework for Alberta has undergone extensive public engagement and will describe the future direction of social policy in Alberta. Alberta Health Services (AHS) is forming a series of Strategic Clinical Networks (SCNs) to address issues of quality of care and timely access to care, with the Addiction and Mental Health SCN among the first to be launched. Meanwhile, Alberta's publicly funded health research arm is moving to a new model of research funding and management. Alberta change leaders outlined progress in all these areas and how they relate to the Alberta Family Wellness Initiative (AFWI) strategy.

Abstract:

CREATING CONNECTIONS: Alberta's Addiction and Mental Health Strategy

By David O'Brien and Wayne Spychka

Creating Connections: Alberta's Addiction and Mental Health Strategy was led by Alberta Health and Alberta Health Services (AHS) and involved 17 partnering ministries (now consolidated into eight ministries) and consultation with key stakeholders. The Strategy sets the direction and agenda for the delivery, policy, legislation, and standards for addiction and mental health for Alberta through 2016.

What is driving the Strategy? One in five people will experience a mental illness in their lifetimes, and the remaining four will be affected by the mental health issues of a loved one. An additional one in 10 people over the age of 15 may become dependent on alcohol or drugs sometime in their lives. Most mental health problems can be treated cost-effectively, enabling most of those affected to become functioning members of society. Yet the addiction and mental health area of health care has been consistently underfunded.

The Addiction and Mental Health Strategy was built on previous work done by AHS and other jurisdictions, including earlier public consultations. Considerations in development of the Strategy included the need to address and prioritize needs along the entire service-delivery continuum, to take a cross-ministry approach, and to consider the needs of specific populations, as well as people who live in rural and remote areas.

The Strategy establishes five strategic directions:

1) Build healthy and resilient communities. This involves reducing risk factors and increasing protective factors, including increasing capacity and access to addiction and mental health services in primary healthcare settings.
2) Foster the development of healthy children, youth, and families, including children at risk.
3) Enhance community-based services, capacity, and supports.
4) Address complex needs. This includes the needs of people such as those with developmental disabilities or fetal alcohol spectrum disorders and people in the correction system.
5) Enhance assurance. This involves patient safety, workforce capability, system performance, and legislative issues.

Seven enablers were identified as essential in building the capacity and infrastructure required to address these priorities. They include policy direction and alignment; workforce development; individuals with lived experience; funding and compensation framework; research, evaluation, and knowledge transfer; technology and information sharing; and cultural safety, awareness and competency.

Twelve priorities have been identified for 2012-2014:

1. Postpartum depression and anxiety screening.
2. Primary healthcare tools and support.
3. Co-ordinated and consistent access to child and adolescent addiction and mental health services.
4. Provincial bed plan for children's mental health.
5. Define a basket of fundamental services for Addiction and Mental Health.
6. Tertiary care framework.
7. Expand telemental health.
8. Housing.
9. Complex needs – persons with developmental disabilities.
10. Workforce development.
11. System performance – outcome measurement.
12. Research, evaluation, and knowledge translation.

Implementation of the Strategy is championed by cross-ministry representation at the Assistant Deputy Minister and Senior Vice President levels. Work on the Strategy is integrated with policy and planning in other areas such as primary care, chronic disease management, seniors' health, and community and rural service planning, to ensure a comprehensive, collaborative, and co-ordinated approach. The Strategy is a living document, and over time more priorities and more stakeholders will be identified. The University of Alberta has been contracted to conduct a gap analysis of public mental health and addiction programs, including a costing analysis, with the aim of forming recommendations to bridge identified gaps and ensure co-ordinated services across the continuum.

Initiatives are currently underway around each of the strategic directions. For example, work is ongoing with Primary Care Networks and other partners around development of the Family Care Clinic model to ensure a strong addiction and mental health services component. Regarding the third direction – enhance community-based services, capacity, and supports – initiatives are underway to develop and define a basket of services required in addiction and mental health programs. The next phase will be to develop a model for standardizing referral and access to a range of these services. AHS is employing a number of strategies to better provide services and supports targeting individuals with complex care needs. This includes development of a framework of supportive housing options, which is being led by Alberta Human Services. Meanwhile, the work that is underway will be evaluated and results will be shared with stakeholders to ensure that outcomes inform practice. It is essential to engage as many people as possible to own and support this work, provide feedback, identify priorities, and move it ahead.

"Alberta Health Services has reorganized around primary and community care, recognizing the need to fully integrate all of the services that are delivered to Albertans in the community. It is really about creating an environment where the policy, the planning, and the strategy work are aligned and integrated such that we start to treat clients rather than treat their illnesses or their afflictions." **David O'Brien**

Abstract:

STRATEGIC CLINICAL NETWORKS: An Update

By Catherine Pryce, RN, MN

The growing costs of health care, the need to ensure quality of care, and issues of access to care in a timely fashion are challenges across Canada. One of the ways Alberta is addressing these challenges is the formation of Strategic Clinical Networks (SCNs), a knowledge-mobilization strategy built on successful networking models in some other countries, and on Alberta's Addiction and Mental Health Strategy. The first six SCNs – including the Addiction and Mental Health (AMH) SCN – were launched in June 2012.

Changes are needed in healthcare delivery in Canada. Part of the problem is that it takes far too long to bring evidence into practice. On the issue of sustainability, healthcare expenditures have been growing at 7-9% annually in Alberta and currently make up over 41% of the total provincial budget. Aside from the Territories, Alberta spends the most per capita on health care, yet ranks in the middle on most key measures for outcomes. Root causes of rising costs appear to be increased complexity of the system and patterns of referral, a lack of good data for making evidence-based decisions, increasing patient expectations for the latest technologies and treatments, and too much investment at the disease end at the expense of health promotion and disease prevention.

SCNs are designed to align Alberta Health Services' (AHS) strategic directions with Alberta Health priorities and to ensure that best evidence is brought into practice. AHS and the Institute of Health Economics in Alberta looked at the top 20 characteristics of high-performing health systems. Key among them were 1) having sufficient data to make decisions; 2) engaging front-line providers in identifying problems and solutions; and 3) determining how to measure value for money spent. AHS is bringing together data from 12 previous, separate organizations and has been meeting with health economists and other professionals to learn how to quantify value for money. Priorities from the zones and local communities are being taken into account as priorities are established.

The first six SCNs were chosen because they are big business, with Addiction and Mental Health the most expensive of all. The next six are anticipated for launch in spring 2013. SCN success and future investment will be based on evidence of improvement in a number of areas, such as prevention of disease, patient outcomes, and reduction in provincial variation in care. The latter is particularly relevant to Addiction and Mental Health. SCNs will work closely with the zones and communities to establish priorities; determine medium- and long-term needs; and implement, evaluate, and optimize innovative service-delivery models. Core teams are designed to be clinician-led. There are also health economists and experts in health technology assessment, finance, and human resources on the teams to assist with modeling.

The AMH SCN has selected three main projects for initial focus: clinical pathways on depression; clinical pathway development on alcohol use disorders; and AIM (Access Improvement Measure), a business process redesign tool.

Depression is the number-one priority. Data show that depression has a healthcare investment cost similar to that of other major chronic diseases such as diabetes and hypertension. Most cases can be treated effectively and at a lower cost at the primary care level. A signature project for the AMH SCN will be refinement of the adult depression pathway, which is being rolled out; continuation of the adolescent depression pathway, which is being piloted; and development of a seniors' depression pathway. The aim is to fill gaps across tiers of care and across the lifespan to address issues of intergenerational transmission of addiction and depression.

Alcohol use is another priority that has potential for significant savings to the healthcare system. Alcohol use is responsible for $407 million in direct healthcare costs annually, as well as $275 million for law enforcement, and $855 million in lost productivity. The initial focus will be not only on people who are addicted but also on those who are harmful users, with emphasis on developing a clinical pathway for alcohol use disorders in adults for direct delivery in AHS' community clinics. Because of links between alcohol use and depression as factors in suicide and as root causes of toxic stress in children, integrating these two care pathways has great potential for advancing opportunities for change.

The third priority is the Alberta Access Improvement Measure (AIM). This business process redesign tool helps primary care providers find efficiencies and streamline a patient's journey through care. AIM can reduce wait times for clients, increase system capacity, and improve clinical care. It has already been used successfully with addiction and mental health community clinics in Alberta. One clinic was able to reduce wait times from 67 days to three days within 12 months. Clinics that have gone through AIM will be ideally situated to implement the clinical care pathways the AMH SCN is developing and rolling out.

"We need to think of SCNs as much bigger than just the core committee. We want every Albertan who has any interest in addiction and mental health – and certainly all the providers – to see themselves as part of the network, to see how they can benefit from it and how they can contribute to it. Eventually, we will have an army of people in Alberta actually working toward the same goal, and we think that's where the synergy and the excitement are." **Catherine Pryce, RN, MN**

Abstract:

A SOCIAL POLICY FRAMEWORK FOR ALBERTA

By Lora Pillipow, BA

Alberta's Social Policy Framework was developed to guide the alignment and redesign of social policy and programs to achieve better outcomes for all Albertans. More than 31,000 Albertans participated in public engagement online, in their communities, and through surveys on this Alberta government priority initiative. Led by Alberta Human Services, the engagement brought together Aboriginal elders, business leaders, non-profit organizations, community groups, service-delivery agencies, municipalities, elected officials, Government of Alberta staff, and Albertans passionate about our province.

What is social policy? Social policy is a range of actions, guidelines, principles, laws, and regulations that express how society cares for its people and comes together to address social challenges. It is a tool to maintain a standard of well-being, ensure just treatment, and provide resources to help meet people's needs. The recently formed Ministry of Human Services brought together services related to employment and immigration, homelessness, persons with disabilities, and family and children's policies. The Social Policy Framework will help develop and communicate a common language and understanding, guide alignment and redesign of programs and policies, and guide decision-making in these areas, as well as in education, health, justice, and community development.

The Social Policy Framework was informed in part by work done externally in other jurisdictions and by the Norlien Foundation. Information on early brain and biological development, toxic stress, healthy environments, prevention and protective factors, and the core story of early child development and addiction provided a foundation for the strategic directions identified for policies and programs that support children and families. The framework recognizes the connections between early childhood, family life, housing, poverty, social determinants of health, education, and other social factors and brings them together. It also connects research across social policy areas that have historically operated in silos, such as childcare, health, and housing; and Aboriginal peoples, newcomers, and seniors.

The framework is community-owned as a result of a transparent public engagement process. Leveraging relationships within its community and stakeholder networks, the Human Services Ministry encouraged communities to hold conversations by providing grants and kits to help facilitate discussions. The Ministry also used new electronic technologies, such as a wiki, to encourage dialogue. A draft document was posted online, and Albertans were asked to comment on it and change it. Albertans were also encouraged to complete online surveys and to make library submissions by uploading relevant articles and research. Nearly 5,000 Albertans participated in community discussions; 5,851 completed online surveys; 131 made online library submissions; and there were 104 wiki entries. Raw data from these submissions were posted online.

Quantitative and qualitative analysis identified key issues and themes of concern to Albertans. The top four social policy issues identified in the online survey were, in order: health, education, poverty, and the economy. Qualitative analysis of the community sessions revealed 10 themes: access, accountability, collaboration and partnership, dignity, equity, human potential, inclusion, mutual responsibility, proactive action, and whole-person. Many people said they had trouble not necessarily with accessing services, but with knowing of their existence. People said they wanted not only government but non-profits and contractors external to the system to be accountable for the funding they receive. Some felt that inclusion and diversity should no longer even be issues. People said they are interested in the relationships they have within organizations and their ability to influence government policy. People also talked about wanting the system to treat them as whole persons, with the recognition that social challenges – like people – are complex and must be handled holistically.

New principles within the framework will be important in shaping policy for the next decade or more. Alberta social policy has historically been heavily based on the principle of self-reliance. The Social Policy Framework will shift emphasis toward principles of mutual responsibility focusing more on family and community. These new principles will reshape how work is done in human services, education, and in addiction and mental health. Another result of the feedback process is the inclusion of more detail in desired outcomes, including a more integrated service-delivery system that serves the whole person, and measures for evaluation of results.

"The purpose of the transparent process was so it would be community led and owned at the end. So the principles informing approaches to research, to policy, and the future of social programs, and the integration and alignment of things are taken to a totally different level by the community. So I think ownership at multiple levels is an extremely important outcome for this process." **Lora Pillipow, BA**

Abstract:

Alberta Innovates – Health Solutions' research and innovation platform

By Jacques Magnan, PhD

Alberta Innovates – Health Solutions (AIHS) is a publicly funded not-for-profit provincial health research organization with a vision to transform the health and well-being of Albertans through its investments in health research and innovation. AIHS is one of four new research and innovation corporations created by the Government of Alberta as their key shareholder to invest in the areas of biosolutions, health solutions, energy and environmental solutions, and technology transfer and commercialization. AIHS succeeds the Alberta Heritage Foundation for Medical Research, which was established by the Lougheed government in 1979 to support health research. The new corporation is evolving from what was primarily a funding agency into an investing organization that plays a more active role in partnership with the research community to ensure that its investments deliver the anticipated outcomes and impact.

AIHS' mandate is to "support, for the economic and social well-being of Albertans, health research and innovation activities aligned to meet Government of Alberta priorities, including, without limitation, activities directed at the development and growth of the health sectors, the discovery of new knowledge, and the application of that knowledge." In essence, the organization's aim is not only to create knowledge, but also to use that knowledge to effect change leading to improvements in health and well-being. A key point is the focus on both economic and social well-being. AIHS' new, more active role as an investor is to create value through focusing its investments; optimizing the capture of benefits from these investments; demonstrating accountability for, and the impact of, the investments; and enhancing the potential for the private sector in Alberta. Value is defined at multiple levels: beyond knowledge generation and capacity building to the impact on policy and practice and the impact on the private sector through development of new products.

This new role entails balancing a number of issues and many more stakeholders in a much larger research and innovation landscape. Investments must take both quality and relevance of research into account, and address both the province's health agenda and wealth agenda. They must also acknowledge a range of timeframes in which research and innovation impacts can be expected to meet immediate, intermediate and long-term needs of population groups or of the health system. Likewise, recognizing that all kinds of research is needed to inform the best decisions throughout the system, a balance in funding must be struck between foundational, translational, and applied research. New value-added impact expectations of a broader stakeholder base will require collaboration and partnerships on many levels, both to identify needs, gaps, and opportunities and to achieve anticipated outcomes. As a starting point, the Alberta Health Research and Innovation Strategy identified 12 high-priority areas, including Child and Maternal Health and Mental Health and Addiction.

AIHS has rolled out a series of funding opportunities and system supports in line with its new mandate. In the area of training and early career development, the Graduate Studentship supports the core development of high-quality, broadly trained, graduate-level health researchers with an emphasis on multi-faceted mentorship that reflects the longer-term needs of stakeholders at the front end of developing research. A PLUS option provides a free year of training to acquire relevant experience beyond graduate training, such as additional business training, an education certificate, or an industry internship. A Clinician Fellowship provides opportunities to practising clinicians in regulated health professions for support to pursue research.

AIHS' translational research activities address gaps between biomedical research, clinical science and knowledge, clinical practice, and health decision-making. Working with Alberta's universities, AIHS is identifying opportunities and recruiting the expertise needed in priority areas as defined by the Campus Alberta Innovation Program. AIHS has added translational research chairs specifically in the initial health priority areas identified for capacity building, including innovative health services delivery, chronic disease, mental health and addiction, and health promotion/disease prevention. Another AIHS funding opportunity, Collaborative Research and Innovation Opportunities, supports collaborative, interdisciplinary, multi-sectoral and/or multi-institutional research with a focus on solutions for complex health problems or issues. Involvement of end-user partners was essential in all aspects of the enterprise from the beginning. An Industry Partnered Translational Fund supports innovative translational research projects in areas of unmet health or health system needs with strong likelihood for technology transfer and commercialization.

The culture change within AIHS is all about recognizing where the key opportunities are to make an impact and provide value by providing evidence to support decision-making. This puts AIHS at the frontier in linking research, practice, and policy.

"Research is about discovering new knowledge, but also about linking the knowledge from that research to expected positive outcomes in a timely fashion." **Jacques Magnan, PhD**

The Path Ahead: Accelerating Innovation, Managing Performance, and Sustaining Change

System transformation is a continuous process, not a destination point. This concept became clear as change leaders outlined strategies to guide Alberta on the path ahead. These include setting up a simple, efficient performance-management dashboard of indicators that look at critical issues, can be easily collected, and can be used to take corrective action. Work that has been done in Alberta over the past few years, led by the Norlien Foundation and the provincial government, has laid the groundwork to make a big impact through communities of purpose driven by raised aspirations to improve performance. Alberta has also set up connections, both horizontally through its membership in the Frontiers of Innovation community and vertically within its own system, for a well-functioning innovation ecosystem. Insights gained from the case study tracing the development of the Network for Improvement of Addiction Treatment (NIATx) will be helpful in guiding the continuing transformation of Alberta's addiction and mental health system.

An important feature of Alberta's system transformation has been the development of a shared language and knowledge base built around the core story of early brain and child development and the roots of addiction. The core story continues to evolve as problems of communicating key concepts about addiction and child development are detected and corrected through rigourous research. A new metaphor has been added to the core story to deal with the concept of resilience and the public's tendency to use this concept to disregard critical parts of the expert science story, with negative consequences for public support for early interventions.

Abstract:

THINKING ABOUT TREATMENT, PROCESS, PERFORMANCE, AND OUTCOME: How Should Alberta Build on Its Existing Performance Measures?

By A. Thomas McLellan, PhD

Alberta has established an excellent foundation for managing substance use problems in the province within the larger healthcare system, starting with a sensible provincial strategy and a comprehensive set of measures that could be performance indicators. However, it is not possible, without burdening the system, to measure and manage everything: performance management has to be done efficiently in a rational system that can self-correct. The key now is to simplify: to focus on realistic goals and a small set of measures that 1) look at processes dealing with important issues; 2) can be collected as part of everyday care; and 3) can be used for taking corrective action.

The prevalence of substance use in the population can be characterized by a pyramid. At the base, there is little or no substance use. At this level, with evidence-based preventive practices in primary care and in schools, it is possible to significantly delay onset of use and achieve 40-50% less substance use in adolescence. The middle level is where substance use begins to be problematic and medically harmful; for example, any amount of alcohol accelerates tumour growth in the case of breast cancer, and more than two drinks a day reduces treatment response in hypertension and diabetes. This is where a large percentage of the population is, and early intervention at this stage can save upwards of $4,000 in health costs per patient within the first year. Yet this point is generally ignored by most of the medical community. At the pinnacle is the nearly 10% of the population that can be classified as having a substance addiction. Traditionally, the system has been geared to focusing on this population with specialty care treatment, such as residential care, where a patient is stabilized, educated, motivated, and discharged. But evidence shows a more effective approach is to treat addiction using a chronic care model, maintaining the patient in continuing care for monitoring and re-intervention when appropriate.

How do you manage and measure performance in a system that covers all three sections of the pyramid? A different approach – prevention, early intervention, or treatment – and therefore different performance measures are needed for the population at each level, but most systems are not set up this way. Alberta is unique in that it is trying to integrate health care, education, child protection, and justice so that these approaches can be used in settings other than health care. The provincial strategy makes sense, but Alberta's performance-management framework lists an unwieldy number of data sources. In a good system, evidence-based treatment procedures produce better outcomes, and monitoring and managing performance in real time during those treatment processes should help achieve the kind of performance that delivers those outcomes. But this logical performance model won't work unless it is built into everyday clinical care in a manner that is easy, fast, and sensible.

Rational performance measurement requires a simplified management dashboard. The key is to focus on a few important issues that can be managed with available time and resources. Determine what information is critical and how it will be used. Collect only the measures that are necessary for that purpose, using existing measures. Don't wait to measure outcomes – they are too far in the future and can be influenced by other factors than the treatment in question. Use outcome proxies or indicators that can be measured during treatment, such as symptom relief, that suggest treatment is leading to a good outcome or that treatment is not working and a change of approach is required. The ideal performance-management dashboard will have about five to seven measures. Collection and reporting of those measures should be part of the line staff's job. Using the information and taking corrective action should be part of the bonus evaluation of the management staff.

How should performance management work in substance use disorders? Alcohol screening and brief intervention have been demonstrated to be effective in preventing addiction, and complications and costs in other diseases. This could entail simply asking a patient about his or her alcohol and drug use as part of another visit in a primary care or emergency room setting and providing a brief motivational intervention pointing out possible negative effects on the patient's other conditions. Relevant measures would be the proportion of patients screened and the proportion of those identified who received the intervention. If the numbers are low, find out why and make a protocol change. People who are identified with advanced substance use would be referred to specialized care for stabilizing, symptom reduction, and education in self-management, and then, as per the chronic care model, referred to continuing care where they can be managed, monitored, and provided with appropriate re-intervention. Here, measures should tell whether people are being managed, monitored, and retained in the chronic care pattern. For this group, the simple performance-measure dashboard would include the proportion of patients who left intensive care and are engaged in continuing care, and the proportion who achieve some level of disease control.

"Alberta is already engaged in what the U.S. Federal Health Care Reform strategy is just beginning (2014) to do. It's about moving from reactive, expensive acute care to more proactive, efficient preventive and early intervention care. It's moving towards integrating behavioural health (i.e., mental health and addiction) into the rest of health care. It's moving towards use of better technology, particularly information systems, to manage that kind of care. It requires integrating all the pieces that wellness requires. That's what Alberta is doing. The concepts are there, the groundwork is there, the fundamental science is there, and the realization that you have to do things differently is there. So now you've got to pick your issues and begin to execute and use performance management to make sure that you're delivering to the promise." **A. Thomas McLellan, PhD**

Abstract:

Mobilizing Science to Accelerate Social Innovation

By James Radner, MPhil

Social innovation is a complex challenge. The application of scientific research across multiple disciplines to social services may seem especially daunting. A general framework for approaching these challenges draws upon tools developed by the Frontiers of Innovation (FOI) community, a network of researchers, policy makers, and practitioners founded by the Harvard Center on the Developing Child and including the Alberta Family Wellness Initiative (AFWI) among its core partners. The framework is based on the twin concepts of a science-driven theory of change and an innovation strategy geared to defining, measuring, and making continuous progress towards ambitious population-level outcomes for families.

In addition to measuring performance, how can we improve best practices? Many of today's practices in our service systems are based on decades-old science. Mobilizing science is about moving leading-edge science into practice. There is also great potential for innovation by seeking better applications of existing science to achieve better outcomes. When evaluating a program, it is not enough to focus on the average positive outcome achieved for the target population – or what went right. It is also important to figure out what went wrong and why for the subpopulations for whom the existing program did not work, and to improve outcomes by looking at their unmet needs. This concept of "stretch outcomes" is part of the strategy of FOI in its mission of achieving substantially greater impacts on the lives of young children whose needs are not being fully met by existing policies and programs. The objective is to systematically reduce the shortfall in the percentage of children who enter kindergarten ready to learn as measured by cognitive and health indicators. FOI now has 400 researchers, policy makers, practitioners, and philanthropists working across North America on moving from today's outcomes to stretch outcomes in this area.

To achieve stretch outcomes, a science-driven theory of change can play a key role. Stretch outcomes are measurable results representing high but achievable aspirations for the well-being of a defined population. To gather and analyze empirical data on what might accomplish the "stretch," a model is needed: a testable causal sequence leading to specific defined outcomes. Assumptions must be explicit; the hypothesis must be testable. The current conceptual framework guiding early childhood policy and practice is based on an enrichment model: enriched language environment, parental education, and better nutrition are the bases for a healthy growth trajectory. The hypothesis behind the toxic stress core story is that those enrichment efforts are limited by toxic stress leading to impaired health and development in a subpopulation of children. An enhanced, testable theory of change suggests that new protective interventions can counter early childhood adversity and restore a healthy developmental trajectory. The theory has been formulated in an integrated science-based logic model that could inform more effective early childhood policies and programs. FOI intends to test and modify this theory. This will require short-cycle feedback steps in which promising strategies are defined and tested in the field, data are analyzed, and informed changes are made in small steps along the way, leading ultimately to breakthrough outcomes. This, in turn, requires a disciplined approach to learning from failure.

Frontiers of Innovation is organized around two complementary functions: connection and acceleration. FOI connects practitioners, policy makers, and researchers into ideas-to-action groups and identifies pockets of activity – small innovating community-level programs and larger innovating jurisdictions – where a focused resource push could result in faster change. Alberta is one of those jurisdictions and two Alberta sites are included in the group of innovating sites.

The work that has been done in Alberta over the past few years has laid the groundwork for innovation. Alberta has systematically developed social capital through a shared language and knowledge base, shared understanding of a science-based core story, cross-boundary relationships and trust, simultaneous multi-level engagement, and institutional commitment from the provincial government. The next step toward making a big impact is to move from a knowledge focus to an outcomes focus, from a shared science-based understanding to a shared theory of change, and from social capital to communities of purpose driven by raised aspirations to improve performance. In Alberta, the Norlien Foundation and the provincial government are providing leadership around aspirations, which can lead to a virtuous circle from raised aspirations, to raised commitment, to raised achievement, and on to higher aspirations. Alberta has also set up the connections needed for a well-functioning innovation ecosystem. The province is connected horizontally with other innovating jurisdictions in the FOI community and has made vertical connections within its own system – from individual front-line clinics to the provincial policy-making level – all focusing collectively on the unmet needs of a cohort of people who need help, and on sharing knowledge and aspirations for improved outcomes.

"What Alberta has done very systematically over the past three years of the Alberta Family Wellness Initiative is develop social capital. You now have a common core story that's very powerful; you have built cross-boundary relationships that will allow you to do new things and to do things better; and you have deep institutional commitment from the Province that wasn't there in the same form before. This is positioning Alberta very well." **James Radner, MPhil**

Abstract:

MAKING, DISSEMINATING, AND SUSTAINING CHANGE

By David Gustafson, PhD

Making and sustaining change is probably the most studied area of human endeavour. Every profession has a different take on it. By borrowing key elements from some of the most successful approaches, it is possible to increase the chances of successful change. Insights gained by tracing the development of the Network for Improvement of Addiction Treatment (NIATx) will be valuable in the context of the Alberta Family Wellness Initiative.

The NIATx model of process improvement helps payers and behavioural healthcare providers remove barriers to treatment and recovery for people facing the challenge of addiction. NIATx was initiated in 2003 by the Robert Wood Johnson Foundation (RWJF), and its process-improvement model has since been adopted by over 3,200 addiction treatment agencies in the United States. Each stage of the NIATx success story offers valuable take-home messages for organizations seeking to effect sustainable change.

Preparation: NIATx was the idea of two visionaries who convinced the RWJF and the federal government to fund the project and established a program office run out of the University of Wisconsin. At this early stage, it was very important to have support from powerful opinion leaders and substantial start-up funds. Choosing someone from outside the addiction field as the change leader was also important for the fresh perspective and new ideas he or she could bring to the table. Considerable attention was put into selection of the initial name of the project, Paths to Recovery, signifying the importance of marketing right from the start.

Problem exploration: To properly understand the barriers to addiction treatment, it was essential to experience the treatment process from the patient's or client's perspective. A walk-through was conducted by a NIATx administrator, who was admitted as a heroin addict in two different cities. Multiple site visits were also carried out. Both yielded surprises that suggested significant, sometimes counter-intuitive, process changes could be useful at some sites. For example, while appointments at most sites were always fully booked, it was discovered that, on average, 60% of them were ultimately cancelled or clients did not show up, creating great inefficiency in the system. Switching to a walk-in system of appointments helped reduce the time to treatment and increased the number of admissions at these agencies. Insights gained at this stage made it possible to create stories, which are critically important in garnering support to accomplish goals. At this stage it is also critical to set a few key measurable goals – such as to reduce time to treatment and increase admissions – to avoid mission creep. Keeping the focus narrow can be a challenge.

Solution exploration: Searching the literature outside the field to identify essential ingredients for change is also important. Five ingredients are critical:

- Deeply understand your customer.
- Buy into CEO goals; find ways to help the CEO sleep at night.
- Get ideas from outside the field; look at how analogous organizations do things better. For example, what makes McDonald's successful in retention of its customers?
- Build in rapid-cycle change. Try a short-term project, figure out what went wrong, fix it, try again, and so on.
- Enlist an influential change leader who has the respect of the CEO.

Solution development: Create a simple change model with few aims and measures – ideally one aim and one simple measure. Try fast, small changes; test and change quickly. Back up data with stories. Provide incentives to get organizations on board early.

Solution adaptation and testing: Test the model on several pilot or demonstration projects to find out what works and what doesn't. In the NIATx case, mission creep was evident. Some projects and measures were too complex. Most important at this stage is to welcome criticism as an opportunity to learn before getting locked into a possibly flawed system. Force Field Analysis – assessing the various forces for and against a proposed change – is a useful tool that focuses on strengths and the modifications needed for improvement (as opposed to weaknesses). Next, make changes based on what has been learned. Use an external evaluator to build credibility.

Dissemination: Once the model has been tested and established as valid, market the results widely, keeping the theme simple for maximum impact. NIATx drew on the idea that if it were able to reduce time to treatment, it could save 55,000 lives in the following year. The result was the highly successful "55,000 lives" campaign, calling for organizations to join.

Sustainability: It helps, but is not always feasible, to fit change into existing programs. The key to continued innovation is to have one person in the organization responsible for sustaining organizational change. Keep things simple. Watch for opportunities to use technology where it can improve cost and outcomes, and regularly measure progress.

"Being able to collect hard data is one thing, but being able to tell the story behind the hard data is the thing that makes it live. So it's very important when you have a hard measure that you couple it with a story that helps you understand that data." **David Gustafson, PhD**

Abstract: Why resilience? Countering toxic areas in the cognitive swamp of addiction and early child development

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

The FrameWorks Institute has applied its Strategic Frame Analysis™ approach to problems of communicating key concepts about addiction and child development. By employing qualitative and quantitative methods, FrameWorks researchers have identified a core story of child development and the early roots of addiction that has demonstrated fidelity and effectiveness in translating the science. Recent research suggests the value of expanding the core story to include a new metaphor to deal with the concept of "resilience" and the widespread public tendency to use this concept to disregard critical parts of the expert science story in ways that create negative consequences for public support for early evidence-based interventions.

FrameWorks uses the metaphor of the swamp to talk about the cultural models that people use to make sense of their world. Its ecology has both good models that can be harvested from the way people think and dangerous models that can eat your incoming message, making people impervious to new scientific information. When these cultural models are problematic, we get preventive strategies and remediation policies on issues that are discordant with those recommended by experts. In research with the Harvard Center on the Developing Child, it became evident that these types of problems would arise with respect to the concept of resilience. A conversation about the intersection of individual susceptibility and environmental interaction – how people are shaped by exposure to adversity and helped by positive community resources and environments – kept being translated into a conversation about ideas of willpower, addiction as an internal need, or stress as a positive factor that toughens a child. Instead of seeing resilience as an outcome resulting from positive, protective environmental factors, people were seeing resilience as an inherent personality trait. This view of resilience was lurking in the swamp of cultural models and torpedoing the conversation that advocates were trying to have with people about policies and programs that would lead to better outcomes.

What does the science say about resilience? The science of resilience says:

1. Environments contain factors that threaten or facilitate positive outcomes to various degrees.
2. Environments vary in the degree to which they are invested with such factors.
3. Individuals vary in susceptibility to environmental factors.
4. This variability originates in the body's genetic instructions, but experiences can adjust susceptibility by shaping whether, and to what degree, genes are expressed, and by building competency.

Put simply, this means:

1. Resilience is a positive outcome in the face of adversity.
2. Resilience is explained by each individual's unique combination of biological susceptibility and experiences that facilitate compensatory skills.

What are the solutions?

1. Better outcomes can be cultivated by promoting protective factors and reducing risk factors.
2. Supportive relationships are key as a protective factor.
3. Skills can be cultivated that mitigate vulnerability to risk factors.

A new explanatory metaphor – the resilience scale – bridges the gap between experts and the public. FrameWorks tested over a dozen metaphors and found the "resilience scale" proved statistically better than other candidates in capturing the science and making it conversational for ordinary Albertans. This metaphor explains development as a scale, with positive factors placed on one side and negative factors on the other. These factors determine outcomes of development, or how the scale will tip. For every child, the fulcrum, or balance point, starts in a different place and can slide based on experiences over time. Scales are dynamic mechanisms that continually respond to influences.

The resilience scale metaphor helps to translate a number of complex science points:

1. Environments, contexts and communities shape developmental outcomes.
2. Individuals have different genetic starting points.
3. The effect of contextual factors is mediated by biology.
4. Genetic starting points are not fixed; brains are plastic.
5. Individual differences are products of different genetic starting points, different positions to which environments and experiences push these points, and the weight applied by risk and protective factors.
6. There is a danger of risk-factor pile-up.
7. Resilience is the occurrence of positive outcomes despite negative weight.
8. Outcomes can be addressed and improved in multiple ways.

Incorporating this metaphor into the core story of the early roots of addiction adds one more powerful piece to the reframing toolbox.

"It's really the role of intervention to work on the fulcrum and to stack factors on the positive side and unstack them on the negative side. This is deceptively simple, but incredibly powerful, in helping people think about the things that we've really been struggling to translate about some very basic ideas from developmental science." **Nathaniel Kendall-Taylor, PhD**

PART 4

Implications for Research, Practice, and Policy

The Alberta Family Wellness Initiative's (AFWI) Recovery from Addiction (RFA) strategy entered its third year with much to celebrate and much more to accomplish. Participants' progress reports illustrated how well the AFWI model is working to mobilize scientific knowledge to make a difference in the lives of individuals and families at risk for or affected by addiction in Alberta. Plenary talks by Alberta change leaders confirmed that work is well underway to implement a more integrated and more effective Addiction and Mental Health Strategy in the province. Symposium Faculty presented the latest research into the neuroscience of addiction, suggesting exciting new avenues for research and clinical practice related to prevention, intervention, and treatment. Progress in all these areas is not only cause for optimism, but also a springboard to addressing the challenges yet to be met. In their daily discussion sessions, interdisciplinary cohorts identified many of these challenges and their implications for research, policy, and practice in Alberta.

Implications for Research

Imaging studies have provided conclusive scientific evidence that addiction is a disease of the brain. They also point to new avenues for enlisting neuroscience in identifying vulnerability to addiction, timing of interventions and choice of treatments, and monitoring treatment progress and potential for relapse. Evidence that psychological therapies can effect changes in brain structure and activity opens the door to more research using imaging specifically targeted at determining the long-term efficacy of psychological therapies administered at particular stages of addiction; the most effective combination of psychological and pharmacological therapies; and the potential for early intervention and prevention as well as monitoring over a lifelong course of chronic disease management for addiction.

"It looks like so many good ideas, commitments, and outcomes will result from our work here. The focus on addiction and mental health positions us well to move forward and bring in evidence-based practice and a focus on early child development and a focus on families. There is a network of people here that will be able to carry forward as a community of purpose." **PARTICIPANT**

Considerable research has been done in the fields of early child development and addiction on attachment between mother and child. However, little has been conducted on the father-child relationship with the notable exception of the Supporting Father Involvement program, which has been piloted in Alberta. Considering the frequency of intergenerational transmission of addiction in families and the call for a more family-centred approach in Alberta's Addiction and Mental Health Strategy, more research in this area is critical.

Implications for Practice

Workforce training and development

Evidence from neuroscience that addiction is a brain disease involving reward deficit, stress surfeit, and executive-function impairment has major implications for clinical practice and workforce development. Knowledge of brain systems and how they develop and work may help guide the choice and timing of treatment to provide a more individualized approach leading to better outcomes. Understanding the interaction between brain activity and treatment effect may support decisions to target therapy, for example toward stress management or executive function, based on the patient's stage of addiction or recovery, and to determine whether or not therapy is working. Basic knowledge of the neuroscience of addiction should be included in the training and professional development of all clinicians and front-line staff, both within Alberta Health Services (AHS) and in community agencies working with addicted individuals and their families. 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. Work is also underway to incorporate this knowledge into nursing curricula. Because of the broad reach of addiction into the community and the scope of Alberta's new Addiction and Mental Health Strategy and Social Policy Framework, some basics in the neuroscience of addiction are also essential in the training of personnel in justice, law enforcement, education, social work, and other human services.

Knowledge and skill sets related to process addiction are in very short supply and also need to be addressed in workforce training and development. The Association of Faculties of Medicine of Canada has taken a lead in this area by including process addiction in its series of podcasts on brain development and addiction, sponsored by the Norlien Foundation.

Implications and issues for primary care

Opportunities for prevention and early intervention are most evident at the primary care level. Many issues remain to be addressed to ensure that physicians and other professionals in primary care are prepared to carry out this responsibility, as well as provide referrals to specialized care and follow-up in a chronic disease management model for addiction. These issues range from fee structures and training to knowledge of all available addiction services and how to access them.

There is growing evidence that early detection of problem drinking short of addiction can save the healthcare system considerable expense. This would involve adopting an SBIRT (screening, brief intervention, and referral to treatment) approach for patients in primary care settings. Under the SBIRT model, all patients automatically undergo a quick screening to assess their alcohol use. Patients deemed at risk of developing serious problems receive a brief intervention to raise their awareness of potential negative consequences of their alcohol use and motivate them to reduce their alcohol consumption. Patients who show symptoms of alcohol dependence receive referrals to specialty care. To make this system work, primary care practitioners need a reliable, up-to-date directory of addiction and mental health services in the community, including non-AHS services, and clinical pathways that support linkage and access to them.

Primary care settings also offer the opportunity to screen for childhood trauma associated with increased addiction risk through administration of the Adverse Childhood Experiences (ACE) questionnaire. Asking a patient how early trauma has affected him or her in later life can help in treatment planning for people with mental health, substance use, and addiction issues. Parts of the ACE Study, from which the questionnaire was developed, are being replicated in an Alberta primary care population.

A family-centred approach

Alberta's Addiction and Mental Health Strategy has incorporated evidence that addiction is a family issue and requires a family-centred approach to treatment. Integrating services for children and parents is essential to help break the all-too-common intergenerational transmission of addiction within families. This realignment of services is starting to happen in Alberta. However challenges remain in enlisting family involvement. Some clinicians have suggested that in cases where there has been an irreparable breakdown between an addict and his or her family, the definition of family can be broadened with potential for a successful outcome.

"I'm always impressed. All this work has been very affirming. It's provided evidence for what I've been doing all these years. I'm very grateful for it." **PARTICIPANT**

Implications for Policy

Alberta's system transformation is gaining momentum. A new Social Policy Framework is nearing completion, and implementation of Alberta's new Addiction and Mental Health Strategy is underway. Moving from strategy and action plan to implementation involves new challenges.

Interface between AHS and not-for-profit community services

At the core of the AFWI strategy and Alberta's new Addiction and Mental Health Strategy are the concepts of brain plasticity; how the interplay of genes and environment in early childhood influences brain development, physical and mental health, and addiction; and the key role of community in providing a supportive environment for children and families. Participants brought up issues related to how AHS will interface with not-for-profit community groups that provide addiction treatment and other human services and how to ensure seamless access to services within the broader system of addiction and mental health in Alberta. Among the concerns raised were issues of patient and client confidentiality, workforce and professional development, and assurance of evidence-based treatment.

Resource allocation

Another core element of the AFWI strategy and Alberta's Addiction and Mental Health Strategy is the importance of investment in the early years. Due to the high level of brain plasticity during early childhood, the return on investment in early intervention is significant. Investment in the early years includes providing quality services not only for children but also for parents, because programs that support parents ultimately improve the early environment of their children. While brain plasticity diminishes in later years, there are still considerable returns on investment to be gained in evidence-based treatment programs for adults with addiction. Also, in light of the strong tendency toward intergenerational transmission of addiction problems, treating a parent with addiction is essential to treating the child.

As previously mentioned, there is evidence that huge savings to the healthcare system can be realized by targeting problem-drinking behaviour that falls short of addiction but endangers physical health. Work is underway in Alberta's Addiction and Mental Health Strategic Clinical Network (SCN) to develop and evaluate a clinical pathway for alcohol use disorders ranging from potentially harmful drinking through to addiction. This effort is focused initially on AHS Community Clinics.

Tracking performance, achieving better outcomes

There is a unique opportunity to bring this work to bear on the health and well-being of children and families in the province. With massive changes taking place in Alberta's addiction and mental health system and the broader human services system, mechanisms must be in place to track system

performance. Effective performance management requires specifying measurable goals, a strategy for producing those goals, and a small set of performance indicators for monitoring progress. Too many performance indicators can burden staff with collection of data that have no practical use. There must also be procedures in place to receive fast feedback in order to take corrective action. This requires a culture and mindset that see failure as a learning opportunity. Alberta has done considerable groundwork in this area and now needs to streamline its goals and indicators for effective performance management as it integrates mental health and addiction into the larger healthcare system.

Once change has been implemented, mechanisms must be in place to prevent systems from reverting to old ways. There is also potential for change fatigue among staff if change is viewed as a discrete event that takes place at arbitrary intervals dictated by management. Case studies of organizational change suggest that change is most successful in organizational cultures that encourage innovation through a continuous focus on unmet needs and quality improvement. Chances of success are also enhanced by appointing personnel to be specifically in charge of sustaining change.

True change requires both top-down and bottom-up understanding and commitment. Buy-in at the front lines is essential. Alberta's new SCNs offer opportunities to meet this challenge. SCN teams are led by clinicians, driven by clinical needs, and composed of clinicians from primary care and community-based providers as well as researchers, AHS zone leaders, content experts, and other partners.

Conclusion

Over the past few years, through the AFWI strategy and institutional commitment from the provincial government, Alberta has positioned itself to make a big impact on improving outcomes for individuals and families affected by addiction, and on driving change in policy and practice for the benefit of all Albertans. This effort has systematically developed social capital through a shared language and knowledge base, shared understanding of a science-based core story, multi-level engagement, and nurturing of cross-boundary relationships. Alberta has also set up the connections, both within its own system and with other innovating jurisdictions across North America, to sustain positive change and innovation. From front-line clinics to the provincial policy-making level, Alberta now has a community of purpose focusing collectively on unmet needs and sharing knowledge and aspirations for improved outcomes. This is not an end point but a springboard to new ways for turning what we know into what we do to shape the world we leave behind for future generations of Albertans.

Closing Comments

The final RFA Symposium opened with a video of participants' reporting on how they were successfully translating their RFA experience into their everyday work. Their experience over the ensuing five days of presentations, workshops, interdisciplinary cohort discussions, and Learning Team sessions provided even more impetus to translate their knowledge into action. As this phase of their RFA activity came to a close, participants departed with a renewed commitment to maintaining the networks they have formed through their RFA engagement and to finding new opportunities to contribute their knowledge and experience to improve outcomes for all Albertans and their families who are affected by addiction. Their networks will continue to expand when the RFA and Early Brain & Biological Development (EBBD) strategies merge at the AFWI Symposium scheduled for October 28 through November 1, 2013, in Edmonton.

The following are comments from some participants on their RFA experience over the past three years:

"A lot of what we experienced in this process strengthened our knowledge and helped us in taking our programs forward. It showed us areas for more emphasis and opened doors for approaching the integration of addiction and mental health services around best practices. It's been a marathon to endure, but challenging because of the accountability, not to just sit through it. I appreciated the push because it's important to get things going in practice."

"I've enjoyed the experience. Judy Cameron was fantastic: she made the complex simple and gave us the tools to relay the information to other people and bring it to our management teams. I also liked how Glenda MacQueen talked about changes in the brain from talk therapy. We often don't think we are having a tangible effect. She drove home the concept that what we say and do has lasting impact, and I will take that back to my group. Not only the information but the connections I made here have helped in my work and I will keep them going. I wouldn't have made those connections if I wasn't here."

"It's really been a valuable experience of bringing clinicians, scientists, and policy makers together and speaking a common language to make things better. It was nice to have the opportunity to engage with upper-level management. That doesn't always happen, but it is happening here."

"It's an incredible privilege to have the opportunity to hear from the experts about groundbreaking research. It's an incredible privilege to be here. I can't think of any other way to have this kind of exposure."

"As always I've enjoyed the high calibre of the speakers. It's an amazing experience. And it's a good format: hearing the speakers and then coming back into our interdisciplinary cohorts. It's amazing to follow-up with our cohort and reconnect here. I'm working on the nursing curriculum and the ability to incorporate the core story. Once it is in the curriculum, it will be easy to influence the next generation in practice, and that's a plus."

"I came into this not knowing anything about addiction. The science is fascinating. I do planning and am working on how to incorporate the learnings into primary care and community supports. The more tools we can share, it gets easier. This is also an opportunity to interact with people in other sectors that I don't normally interact with, and a good opportunity to learn from them and teach them, too. It opens my mind."

"I've been to all six Symposia (Early Brain & Biological Development and Recovery from Addiction) and they have corroborated things I already knew but without evidence. And I learned a lot I never knew. I especially liked the focus on supporting parents and moms – giving them hope rather than taking it away."

"This has been pretty incredible: all the learning and knowledge here and put in a language I can understand. There's so much I can use in my job. Every person that speaks – there's a valuable little nugget. And the connections I've made – I've taken in workshops with people I've met here and also brought in a speaker I heard here."

"This is a great place to scratch your brain!"

Appendix I

SYMPOSIUM PEOPLE: DEVELOPMENT AND MANAGEMENT

The Symposium involved a great number of people in its development, planning, and delivery. Major groups involved in these activities were:

Senior Leadership Team

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

Barry Andres, MSc, Executive Director, Rehabilitation and Recovery, Alberta Health Services

Peter Butt, MD, CCFP(EM), FCFP, Associate Professor, College of Medicine – Family Medicine, University of Saskatchewan

Joe Frascella, PhD, Director, Division of Clinical Neuroscience and Behavioral Research, National Institute on Drug Abuse

Irving Gold, MA, MCA, Vice President of Government Relations and External Affairs, Association of Faculties of Medicine of Canada

Glenda MacQueen, MD, PhD, FRCPC, Vice Dean, Faculty of Medicine, and Professor, Department of Psychiatry, University of Calgary

Nancy Mannix, JD, Chair and Patron, Norlien Foundation

A. Thomas McLellan, PhD, Chief Executive Officer and co-founder, Treatment Research Institute

Catherine Pryce, RN, MN, Vice President, Addiction and Mental Health Strategic Clinical Network, Alberta Health Services

Nicole Sherren, PhD, Scientific Director and Program Officer, Norlien Foundation

Paula Tyler, President, Norlien Foundation

Franco Vaccarino, PhD, Vice President and Principal, University of Toronto Scarborough

Arlene Weidner, RN, MSc, CHE, Healthcare Consultant, Adjunct Associate Professor, Faculty of Nursing, University of Calgary

Design Committee

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

Laurie Beverley, RN, MN, Executive Director, Community Treatment and Support, Addiction and Mental Health, Alberta Health Services

Irving Gold, MA, MCA, Vice President of Government Relations and External Affairs, Association of Faculties of Medicine of Canada

Tom Mountain, BA, Manager, Addictions, Addiction and Mental Health, South Zone West, Alberta Health Services

Daniel Scott, RN, MN, Education Manager, Information and Evaluation Services, Edmonton Zone, Addiction and Mental Health, Alberta Health Services

Nicole Sherren, PhD, Scientific Director and Program Officer, Norlien Foundation

Ralph Strother, MD, Senior Program Officer, Max Bell Foundation

Arlene Weidner, RN, MSc, CHE, Healthcare Consultant, Adjunct Associate Professor, Faculty of Nursing, University of Calgary

Tuxephoni Winsor, RN, BN, Education Consultant II, Addiction Program Education Initiative, Alberta Health Services

The Norlien Foundation

Nancy Mannix, JD, Chair and Patron

Staff

Paula Tyler, President

Michelle Gagnon MBA, PhD, Vice President

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

Laurie-Anne Bulmer, Events Coordinator

Teresa Stewart, Executive Assistant

Kate Stenson, Administrative Support

Liza Contreras, Administrative Support

Appendix 2

SYMPOSIUM PEOPLE: PRESENTERS AND FACULTY

CONTENT FACULTY

Susan Nall 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.

Judy Cameron, PhD

University of Pittsburgh

Professor of Psychiatry and Director of Science Outreach, University of Pittsburgh; Affiliate Senior Scientist, Oregon National Primate Research Center. Over the past 10 years she has been a member of the MacArthur Foundation Research Network on Early Experience and Brain Development and is currently a member of the National Scientific Council on the Developing Child, the Scientific Research Council for the National Child Study Center in New York, and the Dana Alliances for Brain Initiatives, a non-profit organization of neuroscientists committed to advancing public awareness of brain research in an accessible fashion.

Marcus Earle, PhD, LMFT, CSAT

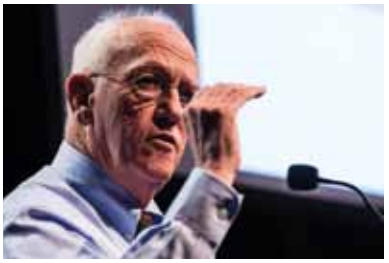
Psychological Counseling Services Ltd.

Clinical Director, Psychological Counseling Services Ltd., Scottsdale, AZ. A licensed psychologist and certified marriage and family therapist, he specializes in working with addictions, specifically sexual addiction, as well as individual and family therapy. He is currently president of the Society for the Advancement of Sexual Health (SASH). He co-authored *Sex Addiction: Case Studies and Management* with his father, Ralph H. Earle.

Brenda Garrett, RN, MC, LPC, CSAT

Psychological Counseling Services Ltd.

Senior Team Leader, Psychological Counseling Services Ltd., Scottsdale, AZ. She teaches and facilitates workshops that address professional sexual misconduct/boundary issues in the workplace. Her private practice specializes in sex addiction/co-addiction, women's issues, codependency, grief and bereavement issues, and relapse prevention planning for individuals, couples, families, and professionals. She serves as a professional monitoring therapist for various state licensing boards.



David Gustafson, PhD

University of Wisconsin-Madison

Faculty member, Industrial and Systems Engineering Department, and Director, Center for Health Enhancement Systems Studies (CHESS), University of Wisconsin. CHESS includes a National Cancer Institute Center of Excellence in Cancer Communications Research, an Agency for Healthcare Policy Research, an Active Aging Research Center of Excellence, and the national program office for the Network for the Improvement of Addiction Treatment (NIATx). He is an industrial engineer who has used his interests in decision theory, behavioural change, and organizational improvement to develop models and systems to improve healthcare delivery.

Charlene Hellson, BA

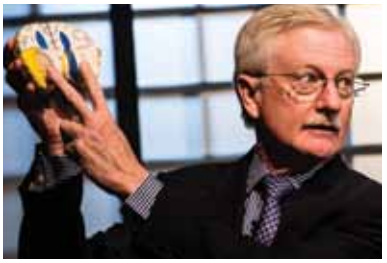
Alberta Health Services

Co-ordinator, Honouring Life: Aboriginal Youth & Communities Empowerment Strategy, Alberta Health Services. She has worked in the field of mental health and as a community artist. She is now integrating her experience, insight, and knowledge to address the disjuncture that exists between indigenous people and healthcare providers. She presents her theatrical monologue, "Unpacking the Backpack," to medical faculties in universities across Canada.

Nathaniel Kendall-Taylor, PhD

FrameWorks Institute

Director of Research, 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. This involves studying how cognitive theory can be applied in understanding how people interpret information and make meaning of their social worlds. 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.



George F. Koob, PhD

Scripps Research Institute

Professor and Chair of the Committee on the Neurobiology of Addictive Disorders, Scripps Research Institute. An authority on drug addiction and stress, he has contributed to our understanding of the neurocircuitry associated with the acute reinforcing effects of drugs of abuse and the neuroadaptations of the reward and stress circuits associated with the transition to dependence. In collaboration with Dr. Michel Le Moal, he wrote the renowned book, *Neurobiology of Addiction*, and has received numerous awards for his excellence in research.

Glenda M. MacQueen, MD, PhD, FRCPC

University of Calgary

Vice Dean, Faculty of Medicine, and Professor, Department of Psychiatry, University of Calgary. Her research focuses on the neurobiology and clinical features of mood disorders. She was a founding member of the Brain Body Institute and is a member of the Hotchkiss Brain Institute and the Mathison Centre for Mental Health Research and Education. She was the 2008 recipient of the Innovations Award from the Canadian College of Neuropsychopharmacology and in 2011 received the Douglas Utting Award for studies in depression.

Jacques Magnan, PhD

Alberta Innovates – Health Solutions

Chief Executive Officer, Alberta Innovates – Health Solutions (retired December 2012). A chemist turned pharmacologist, with a decade of research experience focused on the pharmacology of brain peptides, he has spent over 22 years in health research management, first at the Medical Research Council of Canada and then at the Alberta Heritage Foundation for Medical Research, now Alberta Innovates – Health Solutions. In 2013, Dr. Magnan took a new position as Senior Scientific Lead on the Canadian Partnership for Tomorrow Project with the Canadian Partnership Against Cancer.

Linda C. 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.

A. Thomas McLellan, PhD

Treatment Research Institute

Chief Executive Officer and co-founder, Treatment Research Institute (Philadelphia, PA). From 2009 to 2010, he was Science Advisor and Deputy Director of the White House Office of National Drug Control Policy, where he helped shape the country's public policy approach to illicit drug use, including promotion of drug treatment through the broader revamping of the national healthcare system. In 1992, he co-founded the Treatment Research Institute to transform the way research is employed in the treatment of and policy making around substance use and abuse. He helped develop the Addiction Severity Index and the Treatment Services Review, both of which are among the most widely used assessment instruments in the world.

David O'Brien, BA, CMA

Alberta Health Services

Senior Vice President, Primary and Community Care, Alberta Health Services. He has held the positions of Vice President – Seniors Health, Vice President – Strategic Contracting, and Vice President – Supply Chain, with Alberta Health Services. He was Executive Director – Contracting and Supply Management for 10 years with the former Calgary Health Region and held a variety of management positions at the Calgary General and Peter Lougheed hospitals.

Lora Pillipow, BA

Ministry of Human Services, Government of Alberta

Executive Director, Social Policy Framework Project Team, and Executive Director, Strategic Initiatives, Ministry of Human Services, Government of Alberta. During her 14 years in public service in Alberta, she has held positions in various ministries including Environment, Human Resources and Employment, Executive Council, and Housing and Urban Affairs. She has a background in political science and women's studies, where she focused her research on the women's shelter system and policy development.

Catherine Pryce, RN, MN

Alberta Health Services

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

James Radner, BA, MPhil, PMD

University of Toronto

Senior Fellow, Harvard Center on the Developing Child, and Assistant Professor, School of Public Policy & Governance, University of Toronto. He is also Executive Director and co-founder of the Boreal Institute for Civil Society and Senior Fellow at the Munk School of Global Affairs. He works extensively with programs focused on children and youth and is partnering with the TruePoint Center for Higher Ambition Leadership and the Center on the Developing Child at Harvard University in the design and development of the Frontiers of Innovation initiative and a series of related initiatives in partnership with the Alberta Family Wellness Initiative and Grand Challenges Canada.

Wayne Spychka

Ministry of Health, Government of Alberta

Director, Addiction and Mental Health, Ministry of Health, Government of Alberta. He has 25 years of experience in the addiction field with the Alberta Alcohol and Drug Abuse Commission, Alberta Health Services, and Alberta Health. He has experience in addiction counselling, community prevention programming, training program development and delivery, contracted service monitoring, and program and strategy development.

MODERATOR

Paula Tyler

Norlien Foundation

President, the Norlien Foundation. She has had a long and distinguished career in the field of human services, most recently as Vice President – Child and Women's Health and Specialized Clinical Services for the Calgary Health Region. She served as Vice President and CEO – Mental Health, at Capital Health in Edmonton, Chief Executive – Child Youth and Family Services for the Government of New Zealand, and Deputy Minister for Alberta Children's Services. She has held several other senior executive positions with the Alberta government, including Deputy Commissioner for Children's Services and Assistant Deputy Minister for Alberta Family and Social Services.

ADDITIONAL WORKSHOP FACULTY AND FACILITATORS

Peter Butt, MD, CCFP(EM), FCFP

University of Saskatchewan

Associate Professor, College of Medicine – Family Medicine, University of Saskatchewan, in a position dedicated to addiction medicine. He serves as a consultant to Mental Health and Addictions in the Saskatoon Health Region, where his clinical expertise focuses on IV drug use, community-based interventions, detox, and integrated treatment program development. He has served on a number of provincial and national committees, including the development of national alcohol low-risk drinking guidelines for the Canadian Centre on Substance Abuse and facilitating an online alcohol screening, brief intervention and referral project for the College of Family Physicians of Canada.

Carol Gray, RN, BN, MN

Healthcare 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. She has worked in several former regional health authorities and with the Government of Alberta. Most recently she was Vice President of Population and Public Health with Alberta Health Services, leading a province-wide program and service. She now consults on healthcare projects in Alberta.

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 is leading the development of an online service for medical students applying for visiting electives. She also leads the AFMC-Norlien Foundation Addictions 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.

Di Vosburgh, MN

Healthcare Consultant

She has over 35 years of experience in the mental health field, working in both acute care and community settings. She has held numerous leadership positions in Calgary and was a senior health executive with the former David Thompson Health Region. Since 2005, she has been self-employed as a healthcare consultant.

Arlene Weidner, RN, MSc, CHE

Healthcare Consultant

Adjunct Associate Professor, Faculty of Nursing, University of Calgary. She served as a Health Systems Surveyor with Accreditation Canada for 11 years and 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.

Appendix 3

SYMPOSIUM PEOPLE: PARTICIPANTS BY LEARNING TEAMS

AREA 1: Research Priorities

FOCUS AREA: Develop priority needs for an addiction research and evaluation agenda(s) that incorporates the influence of epigenetics, neurodevelopment, and behavioural experiences on the development of subsequent disease, and also supports the needs of policy and practice.

TEAM 1 – Research Priorities

Laurie Beverley, RN, MN, Executive Director, Community Treatment and Support, Addiction and Mental Health, Alberta Health Services

Lorraine Breault, PhD, Professor, Psychiatry, Faculty of Medicine, University of Alberta

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

Kathy Huebert, MA, Manager, Strategy, Alberta Health Services

Diane Kunyk, PhD, RN, Faculty of Nursing, University of Alberta

Gerri Lasiuk, RPN, RN, MN, PhD, Assistant Professor and Honours Program Co-ordinator, Faculty of Nursing, University of Alberta

Carmen Peti, BSc, MD, Resident, Psychiatry, University of Alberta

Angus Thompson, PhD, Research Affiliate, Institute of Health Economics

AREA 2: Co-ordination of Research, Policy, and Practice Areas

FOCUS AREA: Ensure effective collaboration between the research, policy, and practice areas in order to support addiction prevention, treatment, and recovery for all Albertans.

TEAM 2 – Co-ordination of Research, Policy, and Practice Areas

Karen Bozocea, BA, MEd, Area Manager, School Services, Child and Adolescent Mental Health Services, Alberta Health Services

Shiela Bradley, BA, Manager, Addiction Prevention, Addiction and Mental Health, Alberta Health Services

Doug Brady, Executive Director, Edmonton Drug Treatment and Community Restoration Court, Provincial Court of Alberta, Justice and Solicitor General, Government of Alberta

Alana Cissell, RPN, Program Manager, Community Addiction and Mental Health – Central Zone, Alberta Health Services

Lorelei Higgins, BA, MBA, Issue Strategist, City of Calgary

Annette Lemire, MSW, RSW, Director, Office of the Chief Medical Officer of Health, Alberta Health, Government of Alberta

Melissa Nelson, Project Manager, Calgary Addiction Strategy

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

TEAM 3 – Co-ordination of Research, Policy, and Practice Areas

Andrea Allen, BScN, Manager, Corrections and Forensics Initiatives, Alberta Health Services

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

David Cawthorpe, PhD, Coordinator, Research and Evaluation, Alberta Health Services

Daniel Scott, RN, MN, Education Manager, Information and Evaluation Services – Edmonton Zone, Addiction and Mental Health, Alberta Health Services

Margaret Shim, PhD, SafeCom Leader, Alberta Health, Alberta Justice and Attorney General

AREA 3: Integration of Services in Care Continuum

FOCUS AREA: Identify strategies to ensure integration between and among services across the continuum of care to ensure smooth movement of patients and families throughout their care.

TEAM 4 – Integration of Services in Care Continuum

Margaret Agnew, RN, BN, Director, Zone Integration and Clinical Standards, Primary & Community Care, Addiction and Mental Health, Alberta Health Services

Barry Andres, MSc, Executive Director, Rehabilitation and Recovery, Addiction and Mental Health, Alberta Health Services

Jennifer Bishop, RN, BScN, Program Manager, Adult Inpatient Program, Addiction and Mental Health, Alberta Health Services

Cheryl Gardner, RSW, MSW, Manager, Clinical Operations, Alberta Health Services

Rod Olfert, MEd, BSW, ICADC, CCC, Knowledge Broker, Canadian Centre on Substance Abuse

Sarah Parkinson, BSW, RSW, Manager, Addiction and Mental Health, Alberta Health, Government of Alberta

Nico Scholten, MA, RPsych, Program Consultant, Concurrent Disorders, Addiction and Mental Health, Alberta Health Services

TEAM 5 – Integration of Services in Care Continuum

Allan Aubry, BA, Director, Addiction, Edmonton Zone, Alberta Health Services

Marni Bercov, BSW, MA, RSW, Director, Justice Services, Acute and Tertiary Care, Addiction and Mental Health, Alberta Health Services

Blayne Blackburn, MSW, RSW, Manager, Addiction Recovery Centre and Opioid Dependency Program, Edmonton Zone, Addiction and Mental Health, Alberta Health Services

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

Kent Riddle, EMT-P, Provincial Manager, EMS Health Integration, Alberta Health Services

Parminder Thiara, BSc, MD, CCFP, FRCPC, Northeast Calgary Women's Clinic, Health Canada, Population Health

Beverley Thompson, BRE, RN, CPMHN(C), Director, Forensics, Addictions and Claresholm Centre, Addiction and Mental Health, Calgary Zone, Alberta Health Services

Doug Urness, MD, FRCPC, Psychiatrist, Zone Clinical Department Head, Addiction and Mental Health Program, Central Zone, Alberta Health Services

AREA 4: Integration of Evidence Across Service Settings

FOCUS AREA: Identify ways to ensure evidence is integrated across service settings.

TEAM 6 – Integration of Evidence Across Service Settings

Nadine Gall, Knowledge Management Consultant, Leading Practices and Innovation, Alberta Health Services

Tracy Palmquist, Registered Provisional Psychologist, Site Manager, Alberta Health Services

Susan Rawlings, BN, MBA, Manager, Standards and Clinical Pathways, Addiction and Mental Health, Alberta Health Services

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

Darlene Wong, BA, LLB, Judge, Edmonton Drug Treatment and Community Restoration Court, Provincial Court of Alberta

AREA 5: Primary Care Practice Settings

FOCUS AREA: Incorporate Symposium content into primary care settings.

TEAM 7 – Primary Care Practice Settings

Penny Borghesan, BSc, RT, MD, CCFP, Clinical Lecturer, Department of Family Medicine, University of Calgary, South Health Campus

Sherry Harris, MSW, RSW, Clinical Supervisor, Shared Mental Health Care, Alberta Health Services

Trevor Josephson, PhD, Clinical Supervisor, Mosaic Primary Care Network, Alberta Health

Meghan McKay, Research Assistant, Alberta Health Services

Dennis Pusch, PhD, RPsych, Co-leader, Behavioural Health Consultation Program, Shared Mental Health Care, Alberta Health Services

Jason Shenher, BComm, MBA, Executive Director, Mosaic Primary Care Network, Alberta Health Services

David Whitsitt, PhD, Behavioural Health Consultant, Alberta Health Services

Brice Willis, MC, Behavioural Health Consultant, Calgary Foothills Primary Care Network, Alberta Health Services

TEAM 8 – Primary Care Practice Settings

Charles Cook, PhD, Director, Evaluation, Chinook Primary Care Network, Alberta Health Services

Stacy Hodgson, MSW, RSW, RPN, Director, Community Addiction and Mental Health, Central Zone, Alberta Health Services

Kelly Malach, BSc, MA, Improvement Facilitator/Project Coordinator, Chinook Primary Care Network, Alberta Health Services

Cheryl Patterson, BEd, MSc, Registered Psychologist, Red Deer Primary Care Network, Alberta Health Services

Peggy Riches, BScN, MBA, Executive Director, Chronic Disease Management, Alberta Health Services

AREA 6: Clinical and Professional Education and Training

FOCUS AREA: Incorporate Symposium content into clinical and professional education and training.

TEAM 9 – Clinical and Professional Education and Training

Pierre Berube, MEd, RPsych, Executive Director, Psychologists' Association of Alberta

Nancy Brager, MD, FRCPC, Associate Professor, Psychiatry, University of Calgary, and Chair, Psychiatry Test Committee, Medical Council of Canada

Ruth Grant-Kalischuk, RN, MEd, PhD, Professor and Associate Dean, Nursing, Faculty of Health Sciences, University of Lethbridge

Yvonne Hayne, PhD, MEd, Senior Instructor, Nursing, University of Calgary

Iris Rudnisky, RN, Faculty Lecturer, Faculty of Nursing, University of Alberta

TEAM 10 – Clinical and Professional Education and Training

Susan Canning, BSc, Manager, Tobacco Reduction, Alberta Health Services

Nancy Flatters, BA, LLB, LLM, Judge, Calgary Family and Youth Court, Provincial Court of Alberta

Ann Harding, BA, BSW, MSW, Manager, Clinical Development, Addiction and Mental Health, Alberta Health Services

Catherine Peirce, MA, Project Manager, e-Learning, Association of Faculties of Medicine of Canada

Wanda Polzin, RSW, MA, EdD, Program Manager, CASA Child, Adolescent, and Family Mental Health Services

Louise Simard, QC, LLB, Member, Objectives Committee, Medical Council of Canada

Signe Swanson, RSW, MSW, Director, Integrated Case Management, Seniors Health, Alberta Health Services

AREA 7: Prevention and Early Intervention Services

FOCUS AREA: Apply Symposium content, specifically epigenetics, neurodevelopment, and the biological embedding of behavioural experiences, to addiction prevention and early intervention services.

TEAM 11 – Prevention and Early Intervention Services

Florence Obianyor, MD, Resident, Family Medicine Program, University of Calgary

Glen Raine, National Native Alcohol and Drug Abuse Program Coordinator, Stoney Trail Wellness Centre

Jackie Smith, RN, BN, Nurse, Family Counsellor, PhD Student, University of Calgary

Donna Vermillion, RN, BScN, FASD Program Coordinator, Tsuu T'ina Nation Health Centre

AREA 8: Enhancing Treatment or Developing Specialized Services

FOCUS AREA: Enhance existing addiction treatment services or develop specialized services.

TEAM 12 – Enhancing Treatment or Developing Specialized Services

Janet Chafe, MSW, RSW, Director, Child and Adolescent Addiction and Mental Health Services, Calgary Zone, Alberta Health Services

Suzie Le Brocq, BA, MPhil, Executive Director/Owner/ Private Practitioner, Le Brocq Counselling & Life Services

Bonnie Lee, RMFT, PhD, Associate Professor, Faculty of Health Sciences, University of Lethbridge

Debra Lussier, BA, MBA, Senior Project Manager, Southern Alberta Forensic Psychiatry Services, Alberta Health Services

Christine Mahoney, Chief Executive Officer, Enviros Wilderness School Association

Jim Marteniuk, MSA, RSW, Operation Manager, Sunridge Medical Gallery, Addiction and Mental Health Services, Alberta Health Services

Tony Temprile, Manager, Youth Addiction Services, Calgary, Alberta Health Services

TEAM 13 – Enhancing Treatment or Developing Specialized Services

Rita Dahlke, MD, Health Director, CUPS Health and Education Centre/Calgary West Central Primary Care Network

Irene Gladue, BA, BSW, Site Manager, Northern Addictions Centre, Alberta Health Services

Lisa Luciano, PhD, CSAT, Executive Director of Clinical Services, Thorpe Recovery Centre

Sharon Steinhauer, RSW, MSW, Coordinator, Social Work Programs, Blue Quills First Nations College

Kendall Taylor, Area Supervisor, Addiction Services, Alberta Health Services

AREA 9: Quality Improvement

FOCUS AREA: Support quality improvement in addiction programs and services through evaluation activities and performance measures.

TEAM 14 – Quality Improvement

Cindy King, MA, Area Manager, Addiction Services – Edmonton, Alberta Health Services

Pete Kisner, RPN, Community Health Addictions Counselor, Alberta Health Services

Patrick McNulty, MA, Manager, Addiction Services – Red Deer, Alberta Health Services

Wayne Spychka, Director, Addiction and Mental Health, Alberta Health, Government of Alberta

Craig Staniforth, BA, Area Manager, Youth Addiction Services – Edmonton, Alberta Health Services

Liana Urichuk, PhD, Director, Information and Evaluation Services – Edmonton Zone, Addiction and Mental Health, Alberta Health Services, and Adjunct Associate Professor, Psychiatry, University of Alberta

AREA 10: Client Outcomes

FOCUS AREA: Improve client outcomes through partnerships and strengthening linkages along the continuum of care.

TEAM 15 – Client Outcomes

Kath Hoffman, Executive Director, Safe Harbour Society

June McCrone-Jenkins, BEd, Aboriginal Programs and Policy Advisor, Aboriginal Community Initiatives, Government of Alberta

Debbie O'Neil-Nugent, RN, Clinical Director, Edmonton Drug Treatment and Community Restoration Court

Erin Partridge, BA, Sergeant, Vulnerable Persons Team and Police and Crisis Team, Calgary Police Service

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

Karen Sliwkanich, BEd, MA, Senior Manager, Cross Sector Collaboration, Alberta Education, Government of Alberta

AREA 11: Chronic Disease Management Model

FOCUS AREA: Implement activities that support a chronic disease management model for addiction treatment in Alberta.

TEAM 16 – Chronic Disease Management Model

Taylor Attrell, BA, BSW, RSW, Care Manager, Adult Addiction Services Calgary, Addiction and Mental Health, Alberta Health Services

Donna Groves, BA, LLB, Judge, Edmonton Drug Treatment and Community Restoration Court, Provincial Court of Alberta

Debbie Hyman, BN, MEd, Director, Clinical Services, Mosaic Primary Care Network

Diana Krecsy, RN, BN, MEd, CEO, Calgary Drug Treatment Court

Stacey Petersen, MSW, RSW, Executive Director, Fresh Start Recovery Centre

TEAM 17 – Chronic Disease Management Model

Ron Beach, BSc, RPN, Prevention Consultant, Addiction and Mental Health, Alberta Health Services/Health Promotion, Disease and Injury Prevention

Susan Gloster, MHSM, Executive Director, Addiction and Mental Health – South Zone, Alberta Health Services

George Harris, RPN, Director, Addiction and Mental Health, South Zone East, Alberta Health Services

Thomas Mountain, BA, Manager, Addictions, Addiction and Mental Health, South Zone West, Alberta Health Services

Linda Roflik, Manager, Inpatient Mental Health Unit, Medicine Hat Regional Hospital, Alberta Health Services

Appendix 4
LEARNING TOOLS: PERSONAL AND TEAM STRATEGIES

Below are selected excerpts from Participants' Personal Action Strategies in response to the statement: "My personal or team goals are:"

Alberta Government Participants

"Continue to build and link to the Integrated Justice Services Project."

"Improved health outcomes from the transformation of correctional health services with specific focus on addiction and mental health issues."

"Continue to integrate RFA knowledge into the Addiction and Mental Health Strategy implementation."

"I would really like to return to the task of 'embodying' the knowledge and core stories I have learned over the past two years and to strengthen my familiarity with the Alberta Family Wellness Initiative (AFWI) website. In my new work role as a mental health therapist, I am particularly interested in the implications for practice. This includes raising awareness within the organization of the importance of working with the parents of the children and adolescents whom we serve."

"My learning team is really strong, and we learn a lot from each other and share resources and ideas amongst ourselves. This year, we hope to visit each other's sites to gain a more in-depth knowledge about each other's work. This will help us to collaborate more fully."

"Influence policy especially relevant to young children, and strengthen prevention so it is funded at least at a ratio of 1 to 3 when policy is developed. Prevention needs to be seen as incremental goals and have a sustained focus."

"To increase my own knowledge of trauma-informed practice, the impact of adverse childhood experiences on youth and adult outcomes, and the link between early childhood development programming and reducing incidence rates of addictions."

"To raise awareness of the need for prevention and early intervention programs for children, youth, and families who are affected by addiction, either personally or through a family member, with an ultimate goal of prevention of future addiction issues."

Alberta Health Services Participants

"My personal goals are related using this RFA lens to develop curriculum and training materials."

"Participate in two Institute for Healthcare Improvements Triple AIM quality improvement projects:

1. To reduce the number of repeat visits by patients with addiction and mental health concerns to the ER at the Royal Alex Hospital in Edmonton through better screening and bridging to community addiction and mental health services. Goals are to reduce healthcare costs and to improve the client experiences in terms of being connected to community-based concurrent services that are significantly lower in cost than admission to ERs.
2. To bridge pregnant women to addiction and mental health services that are community-based in order to reduce admission to ERs. Also focus on earlier intervention to connect to GPs and access prenatal care earlier in pregnancy to help address concurrent disorders more effectively. Goal is not only to improve the mother's health but also outcomes for the baby."

"Work on an education module for Alberta Health Services' (AHS) continuing care staff to be posted on our AHS Insite website has begun. My team decided that the content from the AFWI website needed to be summarized and framed for a seniors' health audience. Agreement was reached to produce an education module. This introductory module will be linked to the work the Association of Faculties of Medicine has done and the AFWI website, along with all the other excellent resources we have been exposed to."

"To measure prevalence of concurrent disorders; measure and monitor access to treatment and retention within services."

"Building on the integration of the addiction and mental health teams that has been taking place over the past two years, we will focus on ensuring that all staff achieve the required competencies for their roles in order to apply specialized knowledge in concurrent capable care for clients and their families."

"Our team goal is to create a clinical pathway for alcohol. The specific goal for 2012/2013 is to create an action plan for implementation."

"To take brain plasticity game to children's therapists to increase understanding; to work to increase trauma-informed care amongst clinics and staff; and to increase awareness of these areas in addiction and mental health for all age groups for rural central Alberta."

"Continue to find venues to facilitate discussions based on brain development, early childhood development, and parenting with front-line staff in South Zone Addiction and Mental Health."

"To work with EMS to establish a protocol to connect potential addictions and mental health patients to required services."

"Meaningful application of evidence in practice settings through ongoing development of care pathways for Addiction and Mental Health (AMH) and through enhancement of community-based AMH services for all age categories across Alberta."

"To examine current evidence-informed practice in addiction intervention, and to support Strategic Clinical Network development of an addiction treatment pathway."

"Work on developing clinical competencies for staff within my role at AHS."

Alberta Justice Participants

"Accept speaking engagements, contribute to professional journals and websites regarding day treatment courts."

"Develop an age-appropriate youth and family education series for my Scouts group, utilizing Early Brain & Biological Development (EBBD) materials."

"Better co-ordination of clients being discharged from institutions."

"To educate the business community of Rotary's Alberta Substance Abuse Prevention (ASAP) group on preventive strategies based on the knowledge gained from RFA."

"Attend Betty Ford for one-week Professional Observation in 2013 and attend National Association Drug Treatment Court Professional Training (one week) in Washington, DC, in 2013."

Non-profit Organization Participants

"Implement chronic disease management into my organization's policies and procedures."

"Continue work on developing and implementing a Family Addictions Program within the Edmonton Zone."

"Work with colleagues to record/disseminate information regarding the Trauma and Attachment Program."

"To develop and introduce a screening tool that occupational offices and referrals can administer that will help identify those affected by the addiction of a loved one."

Primary Care Network and Physician Participants

"Participate with my team on introducing and validating the Adverse Childhood Experiences (ACE) Study within a PCN Clinic (in Calgary and area). The team wants to then introduce treatment for those that have high ACE scores."

"To continue to promote within my sphere of influence that addiction is a chronic disease and requires a chronic disease model of care for treatment."

"A public awareness campaign to promote addiction as a chronic disease."

"Identify existing addiction and mental health supports and treatment programs accessible to primary care providers; identify and streamline clinic processes to support the patient and providers' use of the existing supports; look for opportunities to enhance clinic communication with outside specialty addiction and mental health providers; work with PCN physicians to enhance their screening efforts for addiction and mental health issues."

"To incorporate the EBBD and RFA Symposium knowledge into addiction and mental health programming for Alberta First Nations."

Provincial and National Professional and Policy Organizations Participants

"Continue to work on addiction e-learning resources."

"Right now I am working on a policy document for the Royal College of Physicians and Surgeons of Canada on EBBD and early learning."

University Clinical Education and Research Participants

"Continue collaborative involvement in a proposed team grant focused on parent-infant attachment interventions that are community-based."

"Continue to collaborate in advocating for and disseminating the neuroscience curriculum for healthcare professionals."

"Explore the possibility of incorporating addiction and mental health courses reflective of the AFWI mandate in an interdisciplinary health professional education certificate program at the University of Calgary."

"Continue to integrate AFWI curricula in undergraduate and graduate nursing education programs."

"Explore opportunities to incorporate into the U of A Faculty of Nursing program the influence of epigenetics, neurodevelopment, and behavioural experiences on the development of subsequent disease."

"Continue working with the community to establish a family resource centre and couples program (focus on father involvement)."

"To enhance or create a new curriculum for undergraduates in medicine and for lifelong learning in medicine."

"Continue to share Symposium content with our practice partners."

"Practice motivational interviewing to assist persons who have an addiction."

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.

A Parent's Guide to the Teen Brain. A multi-media website for parents that presents research-based information on neurodevelopmental aspects of addiction risk for adolescents. This site was created by the Partnership for a Drug-Free America at Drugfree.org, the Treatment Research Institute, and the WGBH Educational Foundation.

http://teenbrain.drugfree.org/

Adverse Childhood Experiences (ACE) Study. One of the largest investigations ever conducted to assess associations between childhood maltreatment and later-life health and well-being. Centers for Disease Control and Prevention, Government of the United States.

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

Alberta Family Wellness Initiative. A multi-disciplinary initiative that connects early brain and biological development and children's mental health with addiction research, prevention, and treatment. This site is a portal for accessing a wide range of resources 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 email.

http://www.albertafamilywellness.org/

Alberta Health Services (AHS) – Addiction & Substance Abuse. Website featuring a large collection of resources and other information about addiction and substance abuse, including services provided by AHS.

http://www.albertahealthservices.ca/addiction.asp

Alberta Medical Association – Physician & Family Support Program. Association-sponsored program that serves Alberta physicians, residents, medical students, and their immediate families experiencing difficulties with substance abuse and addiction, psychiatric and mental health concerns, and a variety of other health and work/life issues.

http://www.albertadoctors.org/

Betty Ford Institute. A non-profit institute in California that focuses on best practices in clinical treatment and related research on alcohol and drug addiction. See the Sci-Mat part of the website for updates from the scientific research literature and other reports.

http://www.bettyfordinstitute.org/

Calgary and Area Addiction Services Guide. Online inventory of major addiction-related services in the Calgary area.

http://www.calgaryaddiction.com/

Canadian Centre on Substance Abuse. Organization with a legislated mandate to provide national leadership and evidence-informed analyses and advice to mobilize collaborative efforts to reduce alcohol- and other drug-related harms.

http://www.ccsa.ca/

Canadian Institutes of Health Research (CIHR) – Institute of Neurosciences, Mental Health and Addiction (INMHA). A unique institute designed to address all aspects of research dealing with brain-mind relationships. INMHA is a government organization that supports research on the functioning and disorders of the brain, the spinal cord, the sensory and motor systems, and the mind through prevention strategies, screening, diagnosis, treatment, support systems, and palliation.

http://www.cihr-irsc.gc.ca/e/8602.html

Connections Canada. An online knowledge exchange for professionals and agencies serving women with substance abuse issues and their children. It is funded by the Canadian Institutes of Health Research (CIHR) and administered by McMaster University.

http://www.connectionscanada.ca/

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

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

Early Brain & Biological Development: A Science in Society Symposium. Summary Report, Volume 1. (2010). Calgary, AB, Canada: Norlien Foundation.

Early Brain & Biological Development: A Science in Society Symposium. Summary Report, Volume 3. (2011). Calgary, AB, Canada: Norlien Foundation.

Early Brain & Biological Development: A Science in Society Symposium. Summary Report, Volume 5. (2013). Calgary, AB, Canada: Norlien Foundation.

http://www.albertafamilywellness.org/resources/search

International Institute for Trauma and Addiction Professionals. Organization that provides clinical training for professionals in trauma and addiction and manages the Sex Addiction Therapist (CSAT®) Certification Program. Also has a directory of CSAT-certified therapists.

http://www.IITAP.com

KnowMo. A knowledge-mobilization website, affiliated with the University of Alberta, that is designed as a hub for addiction and mental health information in Alberta.

http://www.knowmo.ca

Maternal Substance Use and Integrated Treatment Programs for Women with Substance Use Issues and Their Children: A Meta-Analysis. (2010). Milligan, K., Niccols, A., Sword, W., Thabane, L., Henderson, J., Smith, A., & Liu, J. Substance Abuse Treatment, Prevention, and Policy, 5(21). doi:10.1186/1747-597X-5-21

http://www.substanceabusepolicy.com/content/5/1/21

National Institute of Drug Abuse (NIDA). NIDA's mission is to apply science to drug abuse and addiction problems by supporting research across a broad range of disciplines and encouraging the dissemination and use of research to improve prevention, treatment, and policy.

http://www.drugabuse.gov/

Network for the Improvement of Addiction Treatment (NIATx). A learning collaborative at the University of Wisconsin-Madison's Center for Health Enhancement Systems Studies. The centre supports payers and providers of addiction services by the application of process improvement techniques to improve the cost and effectiveness of the care delivery system.

http://www.niatx.net/

Ontario Medical Association – Physician Health Program and Professionals Health Program. Association-sponsored programs supporting Ontario physicians, veterinarians, and pharmacists. These programs work with individuals, families, and workplaces experiencing difficulties with substance abuse and addiction, psychiatric and mental health concerns, stress, burnout, work-related conflict, and a variety of family issues.

http://php.oma.org/

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.

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

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.

http://www.albertafamilywellness.org/resources/search

Society for the Advancement of Sexual Health. Professional organization for the field of sexual addiction treatment. This website offers information and resources to those seeking support for sexual addiction.

http://www.sash.net

Substance Abuse and Mental Health Services Administration. Large U.S. federal government-sponsored organization focusing on prevention, treatment, and recovery issues for substance abuse and mental health problems.

http://www.samhsa.gov/

Treatment Research Institute. A non-profit research and development organization located in Philadelphia, PA, dedicated to science-driven reform of treatment and policy in substance abuse.

http://www.tresearch.org/

NATIONAL SCIENTIFIC COUNCIL ON THE DEVELOPING CHILD WORKING PAPERS

Available from: http://developingchild.harvard.edu/resources/reports_and_working_papers/

Working Paper 1. Young Children Develop in an Environment of Relationships. (2004).

Working Paper 2. Children's Emotional Development is Built into the Architecture of Their Brains. (2004).

Working Paper 3. Excessive Stress Disrupts the Architecture of the Developing Brain. (2005).

Working Paper 4. Early Exposure to Toxic Substances Damages Brain Architecture. (2006).

Working Paper 5. The Timing and Quality of Early Experiences Combine to Shape Brain Architecture. (2007).

Working Paper 6. Mental Health Problems in Early Childhood Can Impair Learning and Behavior for Life. (2008).

Working Paper 7. Workforce Development, Welfare Reform, and Development of Young Children. (2008).

Working Paper 8. Maternal Depression Can Undermine the Development of Young Children. (2009).

Working Paper 9. Persistent Fear and Anxiety Can Affect Young Children's Learning and Development. (2010).

Working Paper 10. Early Experiences Can Alter Gene Expression and Affect Long-Term Development. (2010).

Working Paper 11. Building the Brain's "Air Traffic Control" System: How Early Experiences Shape the Development of Executive Function. (2011).

Working Paper 12: The Science of Neglect: The Persistent Absence of Responsive Care Disrupts the Developing Brain. (2012).

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 – Anxiety is 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. Free-floating anxiety – anxiety that lacks a definite focus or content – frequently occurs as a symptom in other categories of psychiatric disturbance, such as depression.

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 story line 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.

Dopamine – A neurotransmitter in the brain that is involved in movement, motivation, and reward; also the neurotransmitter most closely associated with addiction. Dopamine is the main neurotransmitter of the reward system and becomes dysregulated in addiction.

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.

Exposure Therapy – A behaviour therapy technique that gradually and safely exposes a patient to a feared object or situation. Exposure therapy is effective in treating a variety of anxiety disorders such as phobias and post-traumatic stress disorder (PTSD).

Glucocorticoid – A hormone that predominantly affects the metabolism of carbohydrates and, to a lesser extent, fats and proteins (and has other effects). Glucocorticoids are made in the outside portion (the cortex) of the adrenal gland and are chemically classed as steroids. Cortisol, which is released in response to stress, is the major natural glucocorticoid.

Hippocampus – A part of the cerebral cortex that plays important roles in short-term and long-term memory and special navigation.

HPA Axis – Hypothalamic-pituitary-adrenal axis, a complex set of direct influences and feedback interactions among the hypothalamus, the pituitary gland, and the adrenal glands that control reactions to stress and regulate many body processes.

Multiple Addictions – Two or more addictions that co-exist within an individual. Multiple addictions can make treatment more complicated and can also promote relapse after treatment.

Nucleus Accumbens – Part of the brain that plays an important role in reward, reinforcement, and addiction. Rewarding behaviours and drugs of abuse cause the neurotransmitter dopamine to be released into the nucleus accumbens.

Oxytocin – A hormone secreted by the pituitary gland that facilitates birth, maternal bonding, and breastfeeding.

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.

Process Addiction – An addiction to a particular behaviour rather than to a foreign chemical. Process addictions can occur in behaviours such as gambling, sexual activity, pornography, eating, shopping, work, and using the Internet.

Rapid-Cycle Testing – A technique in which the goal is to test a particular change on a small scale, learn what you can, and improve in the next application. Rapid-cycle testing can lead to larger improvements through successive quick cycles of change.

Secure Attachments – Strong, positive, and trusting emotional attachments formed between infants and their mothers and other 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. The interactive influences of genes and experience shape the developing brain. Like the process of serve and return in a game of tennis, young children naturally reach out for interaction. When adults respond by mirroring back those interactive gestures in a consistent way, the child's learning process is complete.

Stress Response System – A fight-or-flight function of the autonomic nervous system that initiates, within seconds of a perceived threat, an integrated repertoire of biobehavioural changes associated with accelerations 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 environments, 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.

Trauma-Informed Approach – A model for services that are provided for problems other than trauma but require knowledge about the impact of trauma, thereby increasing their effectiveness. This model takes the experience of trauma into account and avoids triggering trauma reactions and/or traumatizing the individual. The behaviour of staff and organizations is adjusted to support the individual's coping capacity so that he or she is able to access, retain, and benefit from the services.

Appendix 6
REFERENCES BY FACULTY PRESENTATION

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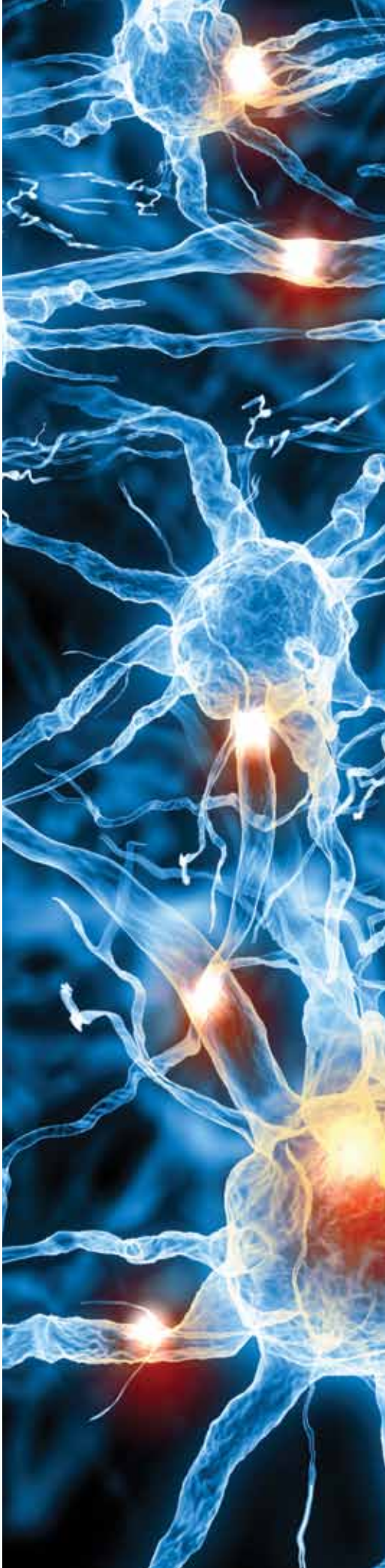

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