VOLUME 4

Recovery from Addiction:
A Science in Action Symposium

Summary Report

OCTOBER 17-21, 2011 – BANFF, ALBERTA, CANADA

Alberta family wellness initiative

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Purpose of Report

This report is the fourth 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

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Welcome

This Symposium was the second of three annual Recovery from Addiction Symposia designed by the Alberta Family Wellness Initiative to create a place and a process for bridging the gap between the science of addiction and application of the science to improve addiction services in Alberta and other jurisdictions.

The level of interest in this effort from various communities has been extraordinary. The participants in the RFA Symposia are leaders in Alberta uniquely positioned to advance the knowledge they gain here to influence research agendas, policy development, decision-making, and clinical practice. In the year between the first and second Symposia, the influence of this initiative quickly became evident in several new policies and programs underway in Alberta. RFA 2011 built on this momentum to focus on further application of knowledge to better inform interventions and on strategies to foster evidence-based change in policy and practice. Our progress tells us our model is working: the gaps between science, practice, and policy are beginning to diminish. But we must maintain our momentum. There is still much work ahead. Together we have a pivotal role to play in shaping the world we leave behind for future Albertans. **Nancy Mannix,** Chair & Patron, Norlien Foundation

TABLE OF CONTENTS

Executive Summary

Background

The Alberta Family Wellness Initiative (AFWI) funds and initiates activities in early childhood development and addiction intended to stimulate evidence-based change in policy and practice for the benefit of Alberta's families and communities. The AFWI works to achieve its aims through activities in networking, applied research, knowledge translation and dissemination, professional development and training, and evaluation.

There is compelling evidence from a wide range of disciplines that early experiences, combined with gene-environment interaction, lay the foundation – for good or ill – for brain development and nearly all aspects of human development throughout life, encompassing mental and physical health, including addiction. The challenge now is to fully integrate this knowledge to better inform policy and practice. The AFWI's mission is to be a catalyst in bringing this about – to bridge the gap between what we know from science and what we do.

A Strategy for Change

In 2010, the AFWI partnered with the Government of Alberta and Alberta Health Services to launch twin three-year interdisciplinary knowledge-mobilization strategies: one in early brain and biological development, and the other in recovery from addiction. These strategies complement and build upon each other, reflecting the interconnectedness of early childhood development and addiction. This initiative serves as an innovation platform to engage researchers, policy makers, and practitioners in a collaborative effort to accelerate mobilization of knowledge and the building of integrated capacities in these areas with the ultimate goal to strengthen the foundations for individuals, families, and communities in Alberta.

The AWFI's unique meta-strategy calls for three annual Early Brain & Biological Development (EBBD) Symposia and three Recovery from Addiction (RFA) Symposia, with participants invited back each year to build upon their experience and knowledge.

Participants in each Symposium series are change leaders selected for their unique capacity to influence research agendas, cross-ministerial collaboration, policy development, decision-making, program design, and practice. Between Symposia, participants have the opportunity to continue their engagement with each other in activities designed to enhance their learning and skills. The total experience provides participants with up-to-date foundational knowledge and the tools, skills, and networks needed to apply this knowledge in their real-world settings.

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 dissemination, applied research, evaluation, and networking. It has established partnerships with numerous national and international organizations working in the areas of childhood development, addiction, and mental health. The Foundation initiates strategic projects to enhance the quality of life for all Canadians, particularly those living in Alberta.

The initiative will culminate in a Symposium in the fall of 2013 that will bring all participants from the EBBD and RFA Symposia together to hear and discuss the latest knowledge in their fields, share their learnings and insights, make linkages, and move forward collaboratively to sustain and advance the progress achieved in Alberta over the duration of the three-year initiative.

The first two EBBD Symposia were held May 31 through June 4, 2010, and May 30 through June 3, 2011; the first two RFA Symposia were held October 18 through 22, 2010, and October 17 through 21, 2011. Developments in Alberta since the first Symposia indicate the AFWI strategy is already achieving results.

Early Uptake

The 2010 EBBD Symposium set out evidence from a wide range of disciplines that early experiences, combined with gene-environment interaction, lay the foundation for healthy brain development and all aspects of human development throughout life. A major goal was to create a common framework of understanding for communicating the core scientific knowledge of early brain development among researchers, policy makers, clinicians, and other stakeholders. The 2010 RFA Symposium built on this foundation to create a greater awareness and understanding of the current scientific research, clinical practice, and evaluation evidence in addiction and established the principle that addiction is a chronic disease of the brain with its roots most often in toxic stressful early childhood experiences. These first Symposia began a process for understanding the factors that contribute to healthy development, the factors that can derail development, and the implications of this knowledge for programs and policies in Alberta.

Many Symposia participants reported they were quickly able to connect the knowledge they gained back to the various areas of policy, services, training, and research they represent. As a result, policy outcomes have already emerged in Alberta. Within about a year of the first EBBD Symposium, the Government of Alberta produced two important documents representing policy shifts related to Symposia learnings: *Let's Talk About the Early Years,* a report by the Chief Medical Officer of Health, and *Creating Connections: Alberta's Addiction and Mental Health Strategy.* Both documents include elements of the core story of early brain development laid out at the first EBBD Symposium.

ALBERTA FAMILY WELLNESS INITIATIVE

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

Let's Talk incorporates language and key concepts discussed at the EBBD, such as the far-reaching effects of toxic stress on brain structure and function, the importance of the "serve and return" interaction that forms secure attachments between parent and infant, and the gene-environment interaction that creates epigenetic change. Significantly, the report also emphasizes the need to invest more in the early years, including targeted interventions and programs that support both children and their parents – key points presented at the EBBD Symposium.

Learnings from the 2010 EBBD and RFA Symposia were integrated into discussions around the development of *Alberta's Addiction and Mental Health Strategy,* published in 2011. Among the innovative changes to the province's addiction and mental health system, the strategy adopts a family-based, more comprehensive approach to prevention and treatment that features chronic disease management and a continuum of care model, both of which were discussed at RFA 2010. A new professional development curriculum – Provincial Concurrent Capable Learning Series – incorporates concepts of long-term chronic disease management, particularly for individuals with concurrent disorders, drawn from the presentations at RFA 2010. Knowledge about brain architecture presented at RFA 2010 is being incorporated into a multi-media toolbox for parents, providing evidence-based information on how they can support their children in the early years. Features of trauma-informed approaches and gender-specific programming reported at RFA 2010 have been incorporated into areas of addiction treatment, including a new women's program in corrections. These are just some examples of how knowledge presented at the AFWI Symposia is now being translated into evidence-based policy and practice in Alberta. The result for Alberta will be an integrated, continuously improving, evidence-based addiction and mental health system.

The summary reports of the 2010 RFA Symposium and the 2010 and 2011 EBBD Symposia are available for download from the AFWI website at http://www.albertafamilywellness.org/resources/search. Videos of the Symposia presentations are also available on the website.

LET'S TALK ABOUT THE EARLY YEARS

Report by the Chief Medical Officer of Health, Government of Alberta

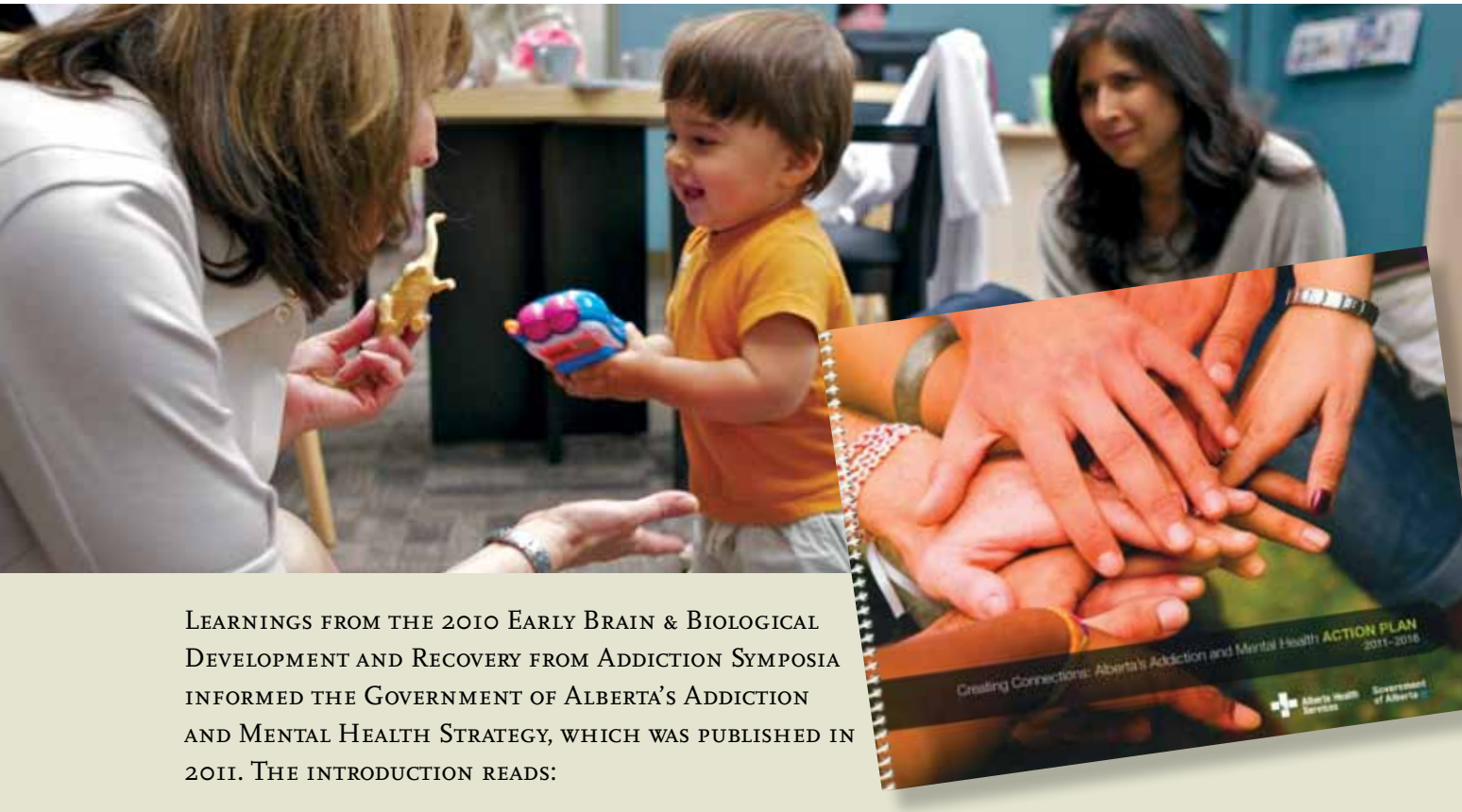
Let's Talk About the Early Years reflects the language and scientific knowledge of early brain development presented at the 2010 Early Brain & Biological Development Symposium.

Highlights from the Report

- Science tells us that what happens in a child's early years has a long reach forward.
- The quality of a child's early environment and the availability of positive experiences are crucial in determining the strength of the brain's developing architecture.
- Negative experiences and toxic physical and social environments can disrupt development and put a child on a more difficult life path.
- Early intervention is cost-effective: we can pay now or we can pay more later.
- Healthy early childhood development emphasizes all areas of development; you can't do one without the others.
- Positive, stable relationships in a child's early years are essential to provide the scaffolding for later developmental outcomes that matter.
- Development takes place in a "serve and return" process, meaning the positive interaction between young children and their caregivers that leads to secure attachments.
- Communities of all types (school, neighbourhood, cultural, religious, workplace) can support healthy early childhood development by providing the resources and social support networks families need.
- Individuals, families, communities, and governments all have a stake in ensuring healthy early childhood development for all Alberta children.

CREATING CONNECTIONS:

Alberta's Addiction and Mental Health Strategy



Learnings from the 2010 Early Brain & Biological Development and Recovery from Addiction Symposia informed the Government of Alberta's Addiction and Mental Health Strategy, which was published in 2011. The introduction reads:

"The Strategy is based on our current understanding that addiction, mental health problems, and mental illness are caused by a complex interplay of genetic, biological, personality, and environmental factors. We now know that the basic architecture of the human brain is constructed through an ongoing process that begins before birth and continues into adulthood.

"Early experiences literally shape how the brain gets built. Just like building a house, it is step-by-step, beginning with a strong foundation, including supportive and resilient families and communities."

The strategy adopts a family-based, more comprehensive approach to prevention and treatment that features enhanced pre-natal and at-birth screening, ongoing parenting support, chronic disease management for addiction, a continuum-of-care model, and improved access to quality addiction and mental health services within the primary health care environment – key concepts discussed at RFA 2010. It establishes five strategic directions, each specifying priorities, key results to be achieved, and supporting initiatives:

1. **Build healthy and resilient communities.**
2. **Foster the development of healthy children, youth, and families.**
3. **Enhance community-based services, capacity, and support.**
4. **Address complex needs.**
5. **Enhance assurance.**

In addition, seven key enablers are identified as critical to building required organizational capacity to achieve the desired key results:

1. **Policy direction and alignment.**
2. **Individuals with lived experience and family engagement.**
3. **Funding and compensation frameworks.**
4. **Workforce development.**
5. **Research, evaluation, and knowledge translation and use.**
6. **Leverage technology and information sharing.**
7. **Cultural safety, awareness, and competency.**

2011 Recovery from Addiction Symposium

While RFA 2010 was geared toward providing a greater awareness of current scientific research, clinical practice, and evaluation evidence in addiction, RFA 2011 focused on application of knowledge to practice and policy. The Symposium brought together more than 100 participants representing a diverse range of backgrounds, perspectives, and professions, including policy makers, program developers, clinicians, researchers, and members of the judicial system, as well as representatives of several professional bodies and organizations. Most of them were reconvening for their second RFA.

An opening video featured a number of participants describing how they had successfully incorporated ideas gained from RFA 2010 into their work and spheres of influence. Their experiences ranged from adopting a chronic disease management model into a treatment program to incorporating the core story of early brain development into addiction training for corrections personnel to promote new attitudes and ways of looking at addiction.

Morning plenary sessions featured expert Faculty presentations followed by smaller group afternoon sessions that focused on understanding the implications for practice and policy. Throughout the week, Learning Teams met in the afternoons and evenings to work on specific group goals for applying knowledge gained from the Symposium to their workplaces. On the final morning, the groups made presentations to a special guest panel of senior-level decision-makers from health care, academic, and government sectors on how they planned to continue working together to further these goals over the ensuing year.

Foundational Knowledge

The Symposium discussion began each day with expert presentations from the Faculty – 13 distinguished scientists, researchers, clinicians, policy developers, and change leaders from Canada, the United States, and the United Kingdom. These morning plenary sessions explored different aspects of recovery from addiction in logical succession. Monday examined evidence from the neuroscience of addiction and emphasized the need to integrate an understanding of the science into prevention and intervention strategies. Tuesday's session looked at common features of addiction, such as multiple addictions and intergenerational transmission, and their clinical implications. Wednesday featured continuum of care approaches within both the health care system and the community. Thursday's presentations stressed the importance of evaluation and provided participants with practical strategies for ensuring quality improvement and better, evidence-based policy making.

The core principle that addiction is a brain disease with an underlying neurobiological process rooted in adverse early childhood experiences was reinforced. Key themes included the potential for screening and intervention in primary care settings and the need to broaden intervention approaches to include the entire family as the context within which addiction takes root and recovery takes place. A third theme was the need to build evaluation and quality improvement into programs to ensure that they are evidence-based and reflect best practices.

Implications for Practice and Policy Development

Participants met each afternoon in interdisciplinary cohort groups to recap the day's presentations and examine the implications for policy and practice in the Alberta setting. Considerable discussion took place around the need for more family-centred approaches and the challenges involved in making the transition from a system geared toward treating the individual. Ongoing development of Primary Care Networks in Alberta was seen as an opportunity to create better linkages to addiction services and programs and for development of an addiction clinical pathway. There was also discussion of the role of peer support models in extending capacity of the system and how to integrate them with respect to issues of quality and standards for practice.

Communicating the Science

The ability to translate scientific knowledge into policy and practice depends on how that knowledge is communicated and how it is received or heard by decision-makers, including the general public whose backing ultimately is required to support policy. The FrameWorks Institute has conducted research to uncover the values and cultural models underlying Albertans' knowledge and attitudes regarding addiction. FrameWorks shared results from that research, including a new simplifying model that allows people to think in ways that are more consonant with the science of addiction when they are making decisions about public policy and social programs addressing solutions to addiction. This work builds on the core story of early development advanced by FrameWorks and the Harvard Center on the Developing Child and detailed in the National Scientific Council on the Developing Child Working Papers. See Appendix 5 for a list of the Working Papers.

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 email, as well as video summaries of Symposia highlights. The website will be a continuing source of current information for all stakeholders.

Further Engagement

Learning Teams continued the collaborations they started at RFA 2010 and worked together throughout the week to prepare action plans for applying Symposium learnings in their work settings. For example, among personal and team goals were plans to: carry out a replication of basic Adverse Childhood Experiences Study findings in primary care settings in Calgary; incorporate Symposium content into professional training for Crown prosecutors; and conduct a survey of family programs in Alberta in order to improve continuum-of-care linkages and optimize patient outcomes. The Learning Teams will continue their engagement throughout the AFWI three-year strategy and will reconvene in the fall of 2012 for the third annual RFA Symposium.

PART 1

INTRODUCTION:

Moving Science into Action

Leading researchers and clinicians in the addiction field now understand that addiction is a primary, chronic disease of the brain based in altered functioning of the reward and motivation systems. Addiction arises from a complex developmental process influenced by the interplay of genetic and environmental factors. Most significant among the risk factors for addiction are adverse experiences – or toxic stressors – that occur in early childhood, such as physical, emotional, or sexual abuse, neglect, family instability, and parental mental health or addiction problems.

Addiction can be categorized into substance-related addiction, such as the abuse of alcohol, tobacco, or drugs; or process addiction, including problematic use of sex, gambling, food, work, or other behaviours. Addiction is often transmitted from generation to generation; multiple addictions are common and often coupled with depression and anxiety.

This fundamental knowledge from the science of addiction should inform all policy, practice, and ongoing research in the field. The Alberta Family Wellness Initiative (AFWI) designed a three-year strategy to accelerate this process in Alberta.

Objectives of the AFWI's three-year strategy are to:

- Embed leading-edge knowledge of best practices in addiction prevention, treatment, and recovery into Alberta's addiction service delivery system and in the organizational systems that support it.
- Recognize early childhood experiences as significant factors in addiction prevention, treatment, and recovery.
- Consistently use research and evaluation to promote quality in programs and services.
- Create an environment for multi-disciplinary networking and sharing of ideas and experiences.
- Increase linkages between addiction research, education, policy, and clinical practice in Alberta.
- Improve outcomes and ensure a client- and family-centred approach to addiction and mental health treatment for all Albertans.

The 2011 Recovery from Addiction Symposium moved the AFWI's strategy closer to realization with a focus on application of the foundational knowledge of addiction to policy and practice.

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 (Teams 16 &17)

The Symposium Experience

The 2011 Recovery from Addiction Symposium engaged participants in their second Symposium experience interacting with expert presenters and with each other to further the translation of knowledge into action on addiction.

2011 Symposium Objectives

Key objectives of the 2011 RFA Symposium were to help participants:

- Explore the implications of applying neuroscience to addiction intervention and treatment models on research, policy, and clinical practice.
- Identify opportunities to apply a neurodevelopmental framework to addiction and mental illness prevention and the implications this has for research, policy, and clinical practice.
- Create awareness of the need for family intervention in addiction treatment and recovery.
- Identify opportunities to extend addiction prevention, intervention, and treatment efforts to all process addictions and the implications this has for research, policy, and clinical practice.
- Increase understanding of how to incorporate new knowledge into policy and clinical practice.
- Generate new ideas and opportunities to integrate and apply knowledge within organizations and systems in order to positively impact awareness and support change.

The Learning Process

Each day of the Symposium was organized around a different theme corresponding to key areas of research and knowledge in science, practice, and policy. Discussion took place in four different group environments each day.

Morning Presentations

Building on the themes of the 2010 RFA Symposium, morning plenary sessions featured expert presentations by the Faculty on various aspects of each day's theme. The Symposium Moderator opened each session with a recap of the previous day's discussions. A question-and-answer session with the faculty panel followed the presentations. Monday offered an additional faculty presentation in the evening.

GUEST PANEL REPRESENTATIVES

Margaret King
Assistant Deputy Minister
Alberta Health and Wellness

Dr. Andre Corriveau
Chief Medical Officer of Health
Alberta Health and Wellness

Donavon Young
Assistant Deputy Minister
Aboriginal Relations
Government of Alberta

Ken Hughes
Chair
Alberta Health Services Board
(currently Energy Minister)

Don Johnson
Member, Alberta Health Services Board

Dr. John Cowell
Chief Executive Officer
Health Quality Council of Alberta

Roger Moses
President
Psychologists' Association of Alberta

Dr. Leslie Brown
Associate Vice President, Research
University of Lethbridge

Dr. Kathy Aitchison
Alberta Centennial Addiction and
Mental Health Research Chair
Faculty of Medicine and Dentistry
University of Alberta

Jeff Kovitz
Chair
Banff Centre Board of Governors

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

Kurt Sandstrom
Assistant Deputy Minister
Safe Communities and Strategic Policy
Alberta Justice

Interdisciplinary Cohorts

Each afternoon, participants connected in smaller, interdisciplinary groups of their peers in science, policy, and practice facilitated by Interdisciplinary Cohort Leaders. Cohorts reviewed and reflected on the morning presentations, explored opportunities to apply the knowledge in Alberta's addiction system and services, and examined the advantages and challenges involved in application.

Faculty Workshops

Faculty provided afternoon workshops that allowed participants to deepen their learning in particular areas covered in the plenary session presentations. These workshops provided examples of current interventions or applications of the knowledge base.

Learning Team Sessions

Participants continued their engagement in the 16 Learning Teams to which they were assigned at RFA 2010 and formed one additional Learning Team. The Teams met daily to discuss new information from the day's presentations and group interactions and how it related to their Focus Challenge. Throughout the week, they explored how to better support each other in individual and group efforts during the year and worked on team presentations they would make on the final day of the Symposium. They delivered their presentations to a special guest panel of high-level academic, health services, policy, and government leaders in Alberta before the full Symposium audience.

Participants

Of the 107 active participants, 80% were reconvening for their second RFA Symposium. The participants represented a diverse range of backgrounds, perspectives, and professions. They included policy makers, program developers, healthcare professionals, clinicians, researchers, advocates, members of the law enforcement, judicial, and corrections systems, and representatives of numerous professional bodies and organizations. About half of the participants were from Alberta Health Services, while many others represented Government of Alberta ministries and Alberta's research-intensive universities. See Appendix 3 for a complete list of participants by Learning Teams.

DAILY CONTENT THEMES

Day 1
The Neuroscience of Addiction

Day 2
Clinical Implications

Day 3
Continuum of Care

Day 4
Quality Improvement Strategies and Evaluation

Day 5
Putting Science into Action

The participants have agreed to remain engaged in the three-year initiative through its completion. During this time, they remain in communication with their Learning Team colleagues 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 during this period.

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 RFA 2011 Symposium was made possible by the following private- and public-sector sponsors:

- 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

Presentations by Symposium Faculty addressed addiction from a wide range of perspectives within the daily themes.

On Monday, participants heard more about the neuroscience of addiction, including compelling evidence, from human and animal studies, connecting adverse early childhood experiences and development of addiction later in life. Strategies for framing expert knowledge to influence public support for policies and programs were also presented.

On Tuesday, presentations focused on the complexities of treating addiction, including the prevalence of multiple addictions, and the need to look at addiction developmentally and to treat the family as client in order to interrupt the intergenerational transmission of addiction within families.

On Wednesday, plenary talks focused on continuum-of-care issues, including a history of addiction treatment, the latest developments within Alberta's healthcare and correctional systems, and opportunities to integrate addiction programs into the province's Primary Care Networks. A movement that applies a cultural and spiritual, community development-oriented approach to address addiction in Aboriginal communities was also presented.

On Thursday, the Faculty addressed quality improvement strategies and evaluation, with an emphasis on change leadership; approaches to promoting screening and behavioural counselling interventions in primary care settings to reduce alcohol misuse; and strategies to ensure evidence-based policy making.

Abstract:

BIOLOGICAL EMBEDDING OF STRESS EARLY IN DEVELOPMENT

By Michael Meaney, PhD

Evidence suggests a cause and effect relationship between family dysfunction or adverse experiences in early life and physical and mental health disorders and addiction later in life. What is the pathway by which these influences happen? And why do they remain stable potentially over the entire lifespan?

Proof-of-principle studies with rats are instructive here. Mother rats vary in the frequency with which they lick their pups, and these differences are stable. So, we can empirically look at the relationship between long-term outcomes and individual differences in maternal care over a critical period of brain development. The amount of licking in the first week of life correlates to traits in adulthood such as behavioural and hormonal responses to stress, changes in the structure of various regions of the brain, and changes in metabolism and reproductive development. For example, the offspring of high-licking mothers are less reactive to stress than those of low-licking mothers. The female offspring of low-licking mothers enter puberty significantly earlier than offspring of high-licking mothers.

Human studies suggest that environmental stresses compromise the mental health of the mother and influence her interactions with her offspring. The same results can be seen in rats: when high-licking mothers are exposed to chronic stress during pregnancy they become low-licking mothers. We are also able to show – through cross-fostering of offspring of high-licking and low-licking mothers – that these variations in maternal care are directly related to developmental outcomes. How does this happen?

Epigenetic science suggests that parental care can directly affect the activity of genes in the brain that regulate brain development and particular stress responses. This involves a form of plasticity at the DNA level that is a function of alterations to the chemical environment in which the DNA operates, as opposed to a change of sequence. These epigenetic chemical marks define how active that region of the genome is, and they can be stable over the lifespan. One of the classic epigenetic marks is DNA methylation. We asked: can this methylation mark be influenced by an environmental event, in particular parental care? If so, and because this mark can be stable, we have a candidate mechanism to explain the enduring effects of parental care.

We looked at one feature of stress response: the brain's release of hormones in response to a perceived threat. This action causes the release of glucocorticoids in the bloodstream that activate our peripheral systems for fight or flight. Glucocorticoids also modulate this system to limit the hormonal release and thus terminate the stress response. Glucocorticoids have a long-term influence by interacting with the glucocorticoid receptor protein found in many brain cells, the net effect being a more modest response to stress. Offspring of rats raised by high-licking mothers make more glucocorticoid receptors – i.e., the gene that codes for the glucocorticoid receptor is more active in animals raised by high-licking mothers than in those raised by low-licking mothers. The latter thus exhibit a greater stress response. That difference appears to be established early in life through these variations in maternal care and remains stable through the lifespan. This model shows some integrity when mapped back onto humans: the quality of maternal care as perceived by an individual correlates with his or her cortisol response to stress.

We have also shown that a rat mother's licking leads to an increase of a specific transcription factor, a protein that binds to a particular region of the DNA to turn on the glucocorticoid gene. The brains of pups of high-licking mothers produce more of this protein. In pups reared by low-licking mothers, the site in the region of DNA involved in binding this protein is predominantly methylated, but it is rarely methylated in pups raised by high-licking mothers. If the site is methylated, the transcription factor can't bind. This indicates that maternal care is defining the structure of the DNA at that particular region and in doing so defining the ability of that region of the genome to activate the glucocorticoid receptor.

Our ability to study these processes in the human brain is understandably limited. Studies of analogous regions of the human genome in the brains of suicide victims and controls who died suddenly and involuntarily provide evidence consistent with this model. An increase in methylation at the region of the DNA that turns on the glucocorticoid receptor was associated with childhood maltreatment.

The key element we are looking at here is plasticity: how these events are established and their potential to be reversed. A further experiment on rats involving environmental enrichment after weaning suggests the effects of enrichment are almost two-fold more profound than maternal care in reducing the difference in the epigenome. The simple message: can these events be plastic in early life? Absolutely. Can they retain that plasticity – i.e., can you remodel the epigenome at later phases? Studies with rats suggest some potential. Whether that potential can be demonstrated in humans awaits further study.

What we do know is that the environment can actually shape the structure and function of the gene and thus produce differences in behaviour, psychological states, and brain function in general. The challenge now is to fully integrate this knowledge into public health and intervention programs designed to treat brain-based problems.

"We now think of the gene and environment as forces that shape our behaviour, our vulnerabilities, and our treatment outcomes. We think of them, statistically in many ways, of interacting – that somehow those forces converge. And we may think of that in scientific terms, but I think we really have yet to fully integrate that into psychologically based intervention and prevention programs." **Michael Meaney, PhD**

Abstract:

THE ORIGINS OF ADDICTION

By Vincent Felitti, MD

Information from the ongoing Adverse Childhood Experiences (ACE) Study challenges the conventional view that certain chemicals are intrinsically addicting. Rather, the evidence illustrates that addiction is not a primary disease but an unconscious attempt to self-medicate to minimize the effects of abnormal life experiences, most commonly from the developmental years. Addiction is not the core problem. It is the marker for the core problem.

The ACE Study is a nearly two-decades-long collaboration between Kaiser Permanente, a major American medical care program with nine million members, and the Centers for Disease Control and Prevention. The concept for the study dates back to 1985 when this researcher was involved in a program to help obese people lose weight. It was noted that many of the people who were most successful at losing weight also made up the majority of the program's dropouts. Further investigation revealed that histories of childhood sexual abuse and growing up in massively dysfunctional households were common in this group.

The ACE Study was designed to determine the prevalence and significance of such events among the general population. In general, the study found:

- Adverse childhood experiences are common, threatening, and often denied.
- They have a profound relation to later addiction, health threats, disease, and death.
- This combination of high prevalence, great potency, and destructiveness makes ACEs the leading determinant of health and social well-being and the major factor underlying addiction.

In analyzing the lives of 17,000 middle class, middle-aged adults, the ACE Study found high correlations between addiction and characteristics intrinsic to the individual's life experiences, particularly in childhood. Study subjects were given an ACE Score representing the number of different adverse childhood experiences they reported, such as recurrent physical abuse or growing up in a household with a drug user. With an ACE Score of six or more, the likelihood that an individual would become an intravenous drug user later in life increased 46-fold compared to an individual with an ACE Score of zero.

The traditional view that certain substances are intrinsically addictive confuses mechanism with cause. In cases of obesity, for example, overeating often qualified as an addiction, but rather than being the core problem, overeating was merely the marker for the core problem. One obese patient who had experienced sexual abuse as a child described losing weight as akin to "losing my protective wall." Another patient, with alcohol, drug, and tobacco addiction, recognized he was using these substances to block out memories of childhood abuse.

This presents a public health paradox: many of the things that are conventionally viewed as public health problems are often also personal solutions to long-concealed adverse childhood experiences. This could explain why treatment is so difficult. The implications of this are huge. Could it be we are treating the outcome, not the cause – the smoke and not the fire – and in so doing inadvertently causing flight from treatment? If so, how can we use this understanding?

Clearly, it is important to identify and acknowledge the presence of early life trauma, such as physical or sexual abuse, humiliation, or living with an alcoholic or drug user, and to resolve it appropriately. A very effective way to uncover information about early life experiences is a well-devised questionnaire the patient can fill out at home, ideally online. With a patient's history of ACEs in hand, the physician can open the dialogue by acknowledging their reality: "Tell me how that has affected you later in your life." The responses are remarkably forthcoming and often help in deciding upon the next step in treatment.

The systems we have in place now can address current problems using this approach. But, most important, we need to move forward and develop systems for primary prevention.

"I think the most important public health event that I can conceive of in the present time would be to help huge numbers of people understand what supportive parenting looks like. There are enormous numbers of people – parents – who have had no personal exposure to supportive parenting themselves. And my belief is that if we could only figure out some way of acceptably showing them what that looks like, many of them would do better." **Vincent Felitti, MD**

Abstract:

THINKING ADDICTION: How Research Can Help Create New Narratives to Inform Public Understanding

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

Studying public understanding is essential to garnering support for evidence-based policies and programs that approach addiction as a collective social responsibility. However, communicating about addiction is far from straightforward and requires strategies other than directly relaying expert information. Any new information has to negotiate a swamp of cultural models, or implicit assumptions and patterns of thinking, that people bring to the way they view their social worlds.

To communicate effectively about addiction, it is necessary to identify the elements of the "swamp of addiction," determine how they interact with messages, and figure out how to use this information strategically to get people thinking more expansively and productively about this issue and of the potential of public policy as a solution.

The FrameWorks Institute uses methods from the cognitive and social sciences to map the gaps between expert and lay understanding on an issue and to reframe the public narrative in order to broaden understanding and increase support for evidence-based policies and programs. FrameWorks' research in Alberta uncovered several dominant public assumptions about addiction, including: addiction is a dependence on a chemical that itself is the cause of the addiction; addicts lack willpower; addiction is controllable but not curable; and experiences from early childhood get carried forward and embedded. Research involving analysis of media content and peer group discussions revealed stereotypes of addicts as deviants and showed that issues of willpower and individual, as opposed to societal, responsibility harden in public discourse about addiction. These studies also show that the science of addiction is under-represented in the media, and discussion of prevention is generally lacking. On the positive side, media content analysis indicates that the science of early child development and the notion of public responsibility for early child development have taken hold in Alberta. This is encouraging and can be useful in communicating the connection between addiction later in life and exposure to early childhood adversity.

FrameWorks next analyzed the values, or enduring beliefs, that orient Albertans' attitudes and behaviours regarding addiction. Researchers first tested the effectiveness of four values – Prevention, Interdependence, Ingenuity, and Prosperity – to better align Albertans' thinking on the issue of addiction with that of health and science experts. Prevention, Interdependence, and Ingenuity proved most effective in moving respondents away from the idea of addiction as an individual responsibility toward one where addicts are seen as being ill as a result of their environment and where the responsibility for treating the illness is perceived to lie with the community. Surprisingly, Prosperity was seen by Albertans not as a reason to address addiction, but as a cause of addiction. Researchers subsequently tested Empathy as a value, with equally surprising results: while Empathy is frequently used in the field to communicate about addiction, this value has the counterproductive effect of reinforcing the idea of addiction as an issue of individual responsibility, and in the experimental work, actually decreased support for evidence-based policies and programs.

The next step in FrameWorks' methodology was to develop and test explanatory metaphors to translate aspects of the expert neuro developmental story of addiction into messages that stick in the public discourse and provide Albertans with greater access to the science on this issue and its policy implications. This process produced a promising message template for addiction in Alberta that uses the existing assumption that experiences get carried forward and pulls in elements of the core story of early child development. It includes a narrative that defines addiction as a brain-based disease and talks of the development of "brain faultlines" as a result of toxic stress in early childhood. We know that there are things we can do to prevent faultlines from developing in the first place and things we can do to minimize chances of these faultlines turning into earthquakes. In testing, the metaphor was effective in establishing a developmental perspective on addiction and in introducing the idea that addressing developmental processes early can prevent subsequent addiction. It tested as communicable and "sticky" and showed effectiveness in shifting people's understanding of addiction and enlisting their support for evidence-based policy solutions. The metaphor also provides a bridge to elements of the core story of early childhood and brain development, such as toxic stress, brain architecture, and levelness. This link allows communicators to integrate all of these concepts into a complete, robust developmental story of addiction.

"Of the three issues we have looked at in Alberta – early child development, child mental health, and now addiction – addiction is the most vulnerable to framing, the most amenable to good framing. So I think the time is really ripe for advocates to think carefully how they frame the issue of addiction...When you remind people that addiction is something that affects the province overall, that it affects people's workplaces and their communities, they instantly understand why this should be an issue that attaches to programs and policies and government intervention." **Susan Nall Bales, MA**

Abstract:

INTERACTION AND CO-OCCURRENCE: The Problem of Multiple Addictions

By Patrick Carnes, PhD, CAS

There are different ways of thinking about addiction: as a brain disease, as a maladaptive response to stress, as a failure to bond. Addiction is all of these, and they work together to form different configurations with very similar results.

In order to improve recovery rates, it is important that we understand the many faces of addiction. In following a thousand families over seven years, we discovered that while we had diagnosed people in treatment with sex addiction, 87% of them reported having multiple addictions. Also, addiction ran in their families: 52% of our patients have siblings who have multiple addictions. Addiction seldom occurs in isolation, neither in the individual nor in the family, and addiction is very much part of the family process in these cases.

Multiple addictions do more than co-exist. They interact, reinforce, and become part of one another. They become packages. By illuminating the patterns by which multiple addictions work together, new data sharply challenge our understanding of addiction and traditional approaches to treatment. First, clinicians need to have the capability to assess across a number of disorders. Second, the long-term trajectory has to include a bridge from therapy to sustained recovery.

The Addiction Interaction Model groups addictions into quadrants according to type and function. One group is substances – such as tobacco, alcohol, cocaine – that provide instant pleasure/relief but compromise brain function over time. In some ways these are easier to give up because they are not necessary for survival. The second group, processes or appetites – including food, sex, work, money – are necessary and can be difficult because they involve daily choices to maintain moderation. In the third quadrant are relationships or compulsive attachments, addictions in which other people are treated as the source of addiction. Examples are codependency, co-sex addiction, traumatic bonding, and romantic addiction. Core affect states, such as despair, intensity/risk, self-loathing, rage, and shame, make up the fourth quadrant.

In addiction interaction disorder, two or more addictions work together in various combinations. For example, one addiction can mask another; the addictive behaviour of one addiction may serve as a ritual pattern to engage another addiction; or one addiction may be used to lower inhibitions for another. Common combinations seen in treatment are cases where one addiction replaces another, or one moderates or helps avoid withdrawal from another. Over a third of patients eventually recognize the dynamics of addiction interaction.

Addictivity starts during development with choices. For example, an adolescent girl may use alcohol, finds it makes her feel more sexually attractive, and trades immediate reward for her future. Drinking, smoking, gambling, or engaging in sex to excess at age 12 or 13 dramatically increases probability of addiction at a later age. In the case of sex addiction, the addiction of choice is not about sex but is a manifestation of a deep wound.

The rapid proliferation of cybersex is having a profound effect on the sexuality of the generation that has grown up with the Internet. The level of their sexual activity is different from that of previous generations in that it is common and non-relational. Cybersex is one part of a major sexual shift going on in the world today. In cultures where men and women are equal, there is less violence. This issue is not only of clinical interest, but also about the future of our planet.

"Once you understand the multiple addiction part, and you start understanding the neural-connections part, you are moving to a whole different model of treatment...You can't do it in 30 days; it's a three- to five-year process to change those neural-pathways... Treatment is just a door-opener. You need to be thinking in terms of the long-term trajectory and looking for who is doing that long-term work and doing it well, or ask what needs to be built in order to have that bridge so people can have that sustained recovery."
Patrick Carnes, PhD, CAS

Abstract:

FAMILY ADDICTION: The Family as the Client

By Claudia Black, MSW, PhD

Understanding the neuroscience of addiction and the relationship of adverse childhood experiences to addiction is critical to understanding the complexity of treating addictive disorders. Equally, this knowledge is critical to understanding how addiction perpetuates itself in the family through generations and why focusing only on the addicted client doesn't break the cycle of addiction.

Thirty years ago, "family programming" in addiction treatment meant working with the wives of men in treatment and teaching them how not to enable their substance-abusing husbands. Today we know that the impact an addict has on his or her family does not end when the addict goes through a recovery process. We also know that addiction doesn't just spontaneously occur within a family system. Chronic toxic stress and adverse childhood experiences that affect the neurobiology of people within the family system reach back generations and become ingrained.

The genogram is a valuable tool that helps family members understand the cyclic nature of their problem. This "family tree" illuminates the underlying aspects of addiction they have been ignoring and the dynamics that prime them from an early age to become codependents. People raised in such families are themselves unable to parent in a healthy way and often pass addiction on to their offspring. An illustrative case is a mother divorced from three men with various addictions who shows up at a community mental health centre with severe depression. Treating her depression and co-occurring anxiety disorder is not enough. Years later she enters the system again in relation to family programming ordered by a judge for her addicted son. The woman's genogram reveals family histories – for her and her three husbands – of trauma, addiction, and abuse going back at least two generations. The key to her recovery is to realize addiction in her family is not situational but repetitious and to start to address the family dynamics she learned as a very young child.

The traumatic manifestations of addiction in a family home commonly include rage, neglect, violence, and physical, sexual, and emotional abuse. It is doubtful a child can be raised in a chronically troubled family without experiencing shame – the painful belief that there is something inherently wrong with who they are. Such children learn to live with fear; discount and deny their own feelings and needs; distrust their own perceptions and give others the benefit of the doubt; rationalize others' hurtful behaviour; fault themselves for the family's problems; and compartmentalize their feelings so as to present a controlled, competent front to the world.

Given that at least four people are impacted by any one person's addiction, consider the impact we could make if we had four times the number of family members involved in treatment, recovery, and prevention programs than we do now. If we seriously believe addiction is a family disease, a generational disease, it is time to recognize that the family is the client. This means we need a continuum of services in order to intervene with long-term results. Therapists need to be trauma-informed and to help family members understand their part in the family system. When we focus on the family and their recovery, the likelihood of the addicted person receiving help, staying in treatment, and continuing in recovery substantially increases.

"Sometimes you'll see children, particularly if they're raised with substance abuse, saying 'I'm going to make sure that it never happens to me. I'm going to make sure that I don't repeat what my mother or father did.' And they may choose to totally abstain. What you find, though, is that they will oftentimes act out in another addicted way. It will often be what we call a process addiction, versus a substance addiction. We also see a lot of what is referred to as trauma bonding, where they end up in committed relationships with people who are engaged in addictive practices." **Claudia Black, MSW, PhD**

Abstract:

UNDERSTANDING SUBSTANCE-ABUSING PARENTS IN SYSTEMS OF CARE: Can Evolutionary Concepts Help?

By Thomas J. McMahon, PhD

Although substance abuse represents a threat to the stability of family systems, clinicians, researchers, and policymakers do not have a conceptual model to understand risk for compromise of family systems occurring across generations in the context of chronic substance abuse. The concept of reproductive strategy drawn from modern evolutionary theory may help policy makers and professionals better understand substance-abusing parents in systems of care in ways that inform public policy, treatment, and prevention.

Children with a substance-abusing parent are at risk for a number of poor developmental outcomes. Children whose genetic liability, often in the form of difficult early temperament, is aggravated by exposure to psychological trauma in unstable family environments appear to be at highest risk. However, the critical problem may not just be the way that parental substance abuse affects an individual child, but the way that genetic liability and disruption of family environments contributes to compromise of early family environments and recurrence of substance abuse generation after generation. When considered from this perspective, the critical question becomes: how do we understand, and then interrupt, the intergenerational transmission of what policy analysts frequently describe as the socially irresponsible production and parenting of children often present within populations of substance-abusing adults?

Evolutionary psychology is an approach to the study of human behaviour that emphasizes the examination of behavioural dispositions as adaptations to the environment that have allowed the human species to survive for millions of years. When considering individual differences in patterns of reproduction and parenting within the human species, evolutionary researchers frequently distinguish somatic effort, representing energy devoted to the growth and survival of the individual, from reproductive effort, representing energy devoted to the growth and survival of the species. Reproductive effort can be further defined in terms of two competing dimensions: (a) mating effort, representing energy devoted to the pursuit of sexual partners to produce children, and (b) parenting effort, representing energy devoted to the care of children. The way that an individual balances mating effort against parenting effort defines the reproductive strategy being pursued by the individual. When considered from an evolutionary perspective, reproductive strategy is best understand as a developmental pathway pursued over an extended period of time in response to a complex interaction of genetic predisposition with environmental circumstances.

In life history theory, researchers argue that the reproductive strategy of humans can be ordered along a continuum. The theory holds that when children grow up in stable, supportive early family environments with consistent, sensitive caretaking and adequate family resources, they develop secure attachments to others, a positive view of self and others, a positive view of the future, and a longer-term orientation to life. This early ecology, in interaction with genetic predisposition, often puts children on a developmental pathway characterized by a slow, high-K, or long-term, reproductive strategy involving a later onset of puberty, later first sexual intercourse, more stable sexual partnerships, later birth of a first child, and fewer children conceived with the same sexual partner over an extended period of time with more investment in parenting. In policy statements, this approach to reproduction is commonly viewed as "socially responsible." Conversely, the theory holds that when children grow up in unstable, stressful early family environments with inconsistent, insensitive caretaking and limited family resources, they develop insecure attachments, a negative view of self and others, a negative view of the future, and a shorter-term orientation to life. This early ecology, in interaction with genetic predisposition, often puts children on a developmental pathway characterized by a fast, low-K, or short-term, reproductive strategy involving an early onset of puberty, early first sexual intercourse, less stable sexual partnerships, early birth of a first child, and more children conceived with different sexual partners over a brief period of time with less investment in parenting. In policy statements, this approach to reproduction is commonly viewed as "socially irresponsible."

Clinical and research data suggest that evolutionary concepts may help policy makers, researchers, and clinicians better understand the parenting of substance-abusing men and women. In a comparative study of drug-abusing fathers done to consider the relevance of evolutionary theory to the study of socially irresponsible fathering, drug-abusing fathers did appear to be at risk to pursue a fast, low-K, or short-term, reproductive strategy. When compared to a demographically matched group of fathers with no history of alcohol or drug abuse, drug-abusing fathers were more likely to have been exposed to adverse childhood experiences, more likely to have become a father at an early age, and more likely to have had more children with more partners in the context of unstable partnerships with less investment in parenting. Although they may be at greater risk as a group, not all drug-abusing fathers were pursuing a fast, low-K, or short-term, reproductive strategy. Consistent with this research finding, careful review of clinical cases suggests that concepts borrowed from modern evolutionary theory may help counsellors better understand the reproductive behaviour of specific individuals in the context of their developmental history.

"Addiction is a developmental brain disease, and when we think about addiction, we need to think about it from a developmental perspective... If we can better understand what is happening across generations, then hopefully we will be able to intervene strategically to mitigate whatever genetic liability children with a substance-abusing parent incur by promoting more stable, more supportive family environments." **Thomas J. McMahon, PhD**

Abstract:

THE WELLBRIETY MOVEMENT: Cultural Healing from Addiction

By Don Coyhis

The Wellbriety Movement is a grassroots effort to create the opportunity for individuals, families, communities, and nations to live sober, balanced lives by applying cultural and spiritual knowledge from elders and from within communities themselves. The process is modelled after nature as a sustainable system.

The movement began with the observation that many indigenous communities were on a downward spiral of alcoholism, sexual abuse, elder abuse, and other health and social ills that didn't respond to remedies based on modern theories of change. Real, sustainable change began with historical and cultural knowledge derived from elders. Their collective memory recalled a time of living together in harmony in a culture organized according to knowledge derived from nature. At its base was an interconnectedness of the physical and spiritual worlds. People were guided through the cycles of life by the teachings of the elders and the ceremonies, language, and cultural values that explained the spiritual world they lived in. This balance was disrupted by the government-run residential school programs in the United States and Canada.

The people who experienced abuse and cultural degradation while attending residential schools as children carried a profound, yet secret and unspoken, pain that was passed on from generation to generation in forms of family and community dysfunction rarely known before. It became evident that alcoholism and community dysfunction were symptoms of this historical trauma. Once historical trauma is brought into the open, the cycle can be broken and change and recovery can begin.

The Wellbriety Movement is a step-by-step community development model based on four laws of change derived from the elders:

1. Change comes from within the individual, the family, and the community.
2. In order for development to occur it must be preceded by a vision.
3. A great learning must occur.
4. You must create a healing forest – i.e., replace an unhealthy root system of anger, guilt, shame, and fear with cultural and spiritual principles.

Wellbriety recognizes the interconnectedness of everything by involving not only those in recovery but their family, friends, and the whole community in the healing process. It trains community facilitators to lead a process that includes community-wide acknowledgement of unresolved grief and the building of infrastructure to support healing, such as men's and women's 12-step groups, children of alcoholics groups, and Sons of Tradition and Daughters of Tradition groups. The system illustrates how change happens not from the top down but from these small circles that expand and change the community as a whole.

Wellbriety teaches that change starts with the "coyotes" in a community or organization. These are the handful of people in every community who have insight and vision, who are able to see solutions to problems, and who do not accept injustice. They are tenacious and willing to be radical and fight for change. Coyotes are valuable to a community or organization that wants to heal because they can arouse and energize people. The coyotes among you are the ones who will make a difference.

"At many conferences I go to, they don't talk at all about any kind of spirituality. It's just all science. It's not that that is bad. What science measures is true, but the human being develops in four directions: emotional, mental, physical, and spiritual. But if you just measure the emotional, mental, physical, and not the spiritual, something is missing and something doesn't resonate." **Don Coyhis**

Abstract:

Integrating Addiction and Mental Health into Primary Care in Alberta

By Nick Myers, MBBS, MRCGP

Since their introduction in Alberta nearly a decade ago, Primary Care Networks (PCNs) have become the most powerful vehicle for delivering change within primary care and thus offer an opportunity to further integrate addiction and mental health into primary care. Some networks have done this successfully using multi-disciplinary teams and linking with existing services within Alberta Health Services (AHS), but there are barriers to be addressed before we can fully build on these solutions.

PCNs were designed to meet specific objectives to improve quality of care, including:

1. Increase the proportion of Albertans with access to primary care.
2. Provide 24-hour access to appropriate services.
3. Increase emphasis on health promotion, disease and injury prevention, and care of patients with chronic and medically complex conditions.
4. Improve co-ordination with other healthcare services through specialty care linkages.
5. Facilitate greater use of multi-disciplinary teams.

Today 2.69 million Albertans are enrolled in 40 PCNs involving 2,400 physicians, or 82% of the family doctors in the province. AHS sits on the governance boards of these networks, but challenges remain as to balancing provincial direction and the need for some standardization with local needs and planning.

PCNs vary as to where addiction and mental health services fit within their individual business plans. Edmonton Southside has forged very strong ties with addiction and mental health service providers using a multi-disciplinary approach. PCNs in the Calgary Zone are piloting the Depression Pathway for use by primary care physicians. There is a good opportunity now for addiction and mental health service providers to consider how PCNs might integrate with what they do and what kinds of conversations need to occur with people in PCNs in their local areas. Within these programs there are strong parallels to chronic disease management – the need for continuity of care, for follow-up, for involvement of the whole team, for self-management. There are a lot of similarities there, so we need not re-invent the wheel.

As PCNs evolve, many challenges remain. Setting priorities to meet the needs of local populations is a major one and will be aided by increasing availability of data. Other issues include choice of meaningful evaluation metrics; training of physician leaders; physical capacity requirements for teams; appropriate degrees of standardization/variation around evaluation, education, and program design; and working with the vastly differing problems of Alberta's geographically diverse areas – from metro/urban to rural and remote. Not least is the question as to how patients are to be involved in planning a system that is designed to be patient-centred.

Currently, a government task force led by Alberta Health and Wellness and co-chaired by AHS is looking at primary health care modernization. The Alberta Medical Association, as the voice of family physicians, is also looking at primary health care. Several key themes run through these processes including: funding, infrastructure, teams, quality, and governance. Setting priorities in the task force document so that populations and physicians groups get their needs met is a challenge.

Right now there are levels of intervention that could improve in primary health care. Within the office-based PCN setting, there is a need for screening, early intervention, and a stepped approach to sending people into programs in the community. Other issues include education around and simplification of best practices and streamlining the referral process. Something that needs to be explored is the opportunity for setting up external partnerships and links with education, social services, and the justice system to access services for patients who need them and provide early intervention.

Within AHS, clarity is required as to funding and shifting of resources. Changing the system to a preventive primary health care focus will require "wiring" to make sure that new programs actually fit the patient and the care providers in the community.

The bottom line is we all need to work together to change the system. It will require the ability to have clear conversations that set the issues on the table and come up with productive solutions. We can do this.

"I can't stress enough the acceptance and enthusiasm now with which teams are received within family medicine. The concept back in 2000-03 of working within a team setting in primary care was somewhat threatening for many physicians. Now we have physicians asking for team members...We're a long way now from Marcus Welby. He was a tremendous guy, multi-skilled, an excellent clinician. But he can't do it alone, and most of us realize that." **Nick Myers, MBBS, MRCGP**

Abstract:

Applying evidence to practice in addiction and mental health

By Cathy Pryce, BScN, MN

Applying evidence to practice in Alberta's addiction and mental health system is an endeavour faced with numerous challenges. In a system like Alberta Health Services (AHS), with over 90,000 people delivering services daily, often at over-capacity, trying to apply new evidence to practice is akin to building a plane in the air while it's flying. Nevertheless, the system is making great strides in using leading-edge knowledge of best practices in addiction and mental health programs to shape services and improve health outcomes.

The history of mental health and addiction treatment over the past four centuries illustrates some of the factors that influence, and often hinder, uptake of evidence into practice. Champions, such as Dr. Philippe Pinel, who promoted a model of compassionate care when he unshackled asylum inmates in 1792, can profoundly influence which treatment models are favoured at any given time. An early 20th century example is the influence of Dr. Edleston Harvey Cooke, who adopted the Nobel Prize-winning treatment of introducing an attenuated malaria parasite into patients with dementia paralytica. The treatment proved to be curative in approximately 60 per cent of cases, thus allowing many long-time patients to return to the community. Social attitudes, such as beliefs as to whether addiction is a moral failing or a disease, led to the development of vastly different types of treatment facilities. Other factors, including cost and physician attitudes, kept chlorpromazine – probably the most significant advance in psychiatric treatment in the past century – from common use in schizophrenic patients for almost 70 years, despite evidence of effectiveness. The 50s and 60s saw an explosion of drug interventions for addiction, many with little research to support outcomes. Consumer preferences and whether or not a marketable product is associated with an intervention can also make a difference in uptake.

In the context of AHS, it is remarkable to note that evidence presented and discussed at the Early Brain and Biological Development (EBBD) and Recovery from Addiction (RFA) Symposia over the past two years is already changing practice. Many of the staff are applying the evidence related to addiction to their spheres of influence daily. The discourse in meetings and conversations has fundamentally changed and incorporated some of this knowledge. The support of the Norlien Foundation – and these Symposia in particular – has allowed the opportunity to expedite some of this work.

Information about brain architecture from Bryan Kolb's presentation at RFA 2010 and concepts like "serve and return" are being incorporated into a multi-media toolbox for parents, providing evidence-based information on how they can support their child in the early years. Tom McLellan's presentation has spurred discussion on how to build quality performance and evidence-based practices into processes and teams in a system as large and complex as AHS. A new professional development curriculum – the Provincial Concurrent Capable Learning Series – incorporates concepts of long-term chronic disease management, particularly for individuals with concurrent disorders, drawn from the presentations at RFA 2010 by Richard Lewanczuk, Cameron Wild, David Gustafson, Mark Gold, and Bryan Kolb. The second level of the series will focus on integrated care and family involvement, again drawing on sources of evidence presented at RFA.

AHS followed up directly with Stephanie Covington to incorporate some of her work on trauma-informed approaches and gender-specific programming into areas of addiction treatment, including a new women's program in corrections. Also in the corrections environment, a universal screening tool for mental illness and addiction has been instituted. For those who screen positive, treatment starts in the facility, with links to community services on their release. Staff training incorporating evidence from neurobiology about how environment affects gene expression has fundamentally changed attitudes from judgmental to more compassionate and understanding.

Finally, the information learned at the 2010 EBBD and RFA Symposia was integrated into discussions around the development of Alberta's Addiction and Mental Health Strategy. With Norlien support, the FrameWorks Institute was engaged in some of the writing of the strategy and associated action plan so as to incorporate some of the concepts and metaphors from the Symposia learnings.

What next for AHS? This is a marathon, not a sprint. Professional development in mental health and addiction is a priority. Increasing awareness in staff is an ongoing challenge. The Norlien resources and access to the Alberta Family Wellness Initiative website are valuable as a way to start the dialogue. The Addiction and Mental Health Clinical Network – which includes academics, researchers, clinicians, program developers, educators, physicians, and psychiatrists – is looking at the evidence in a number of areas and has been instrumental in referencing the Depression Pathway in primary care. Linkages to researchers will be ramped up significantly with the creation of strategic clinical networks (SCNs), which will take end-to-end responsibility from prevention to ongoing treatment for a defined area of health. An embedded research network within each SCN will enable AHS to set the research agenda based on health needs and likewise enable the researchers to move their knowledge more quickly into practice. The Addiction and Mental Health Strategic Clinical Network will be one of the first to showcase how this system will work.

"Sometimes, given the number of variables there are affecting how evidence comes into practice, it's really quite fascinating that we do make the changes that we do, and it's because our front-line clinicians are heroes in this." **Cathy Pryce, BScN, MN**

Abstract:

TRANSLATING RESEARCH INTO PRACTICE: Findings from Two Group Randomized Trials on Alcohol Screening and Treatment in a Primary Care-Based Research Network **By Steven Ornstein, MD**

PPRNet has conducted two group randomized trials of alcohol screening and intervention, funded by the National Institute for Alcohol Abuse and Alcoholism (NIAAA). The research looked at approaches to promoting recommendations by the U.S. Preventive Services Task Force for screening and behavioural counselling interventions in primary care settings to reduce alcohol misuse by adults. Alcohol screening in a general medical setting is not always or primarily aimed at detecting addiction. Heavy drinking affects blood pressure and blood glucose control; therefore alcohol screening and counselling can improve clinical management of hypertension and diabetes.

The first study, Accelerating Alcohol Screening – Translating Research into Practice (AA-TRIP) was conducted from 2004-2007 to evaluate the efficacy of an intervention designed to increase alcohol screening, diagnoses of alcohol disorders, and appropriate counselling and referral among patients with hypertension. The control practices received written guidelines from NIAAA, an electronic health record (EHR) decision-support template, and an audit and feedback report on their performance. The intervention practices received the same interventions, but also received visits for academic detailing and help planning their quality improvement approaches, and a two-day meeting for sharing best practices on screening. Of the 27,000 hypertensive patients in the study, those in the intervention group were five times more likely to have received counselling for high-risk drinking or drinking disorders than those in the control group. There was also a gradual step-wise increase in alcohol screening over a two-year period among the intervention practices – from 14.5% to over 76.7% of hypertension patients – while the control practices ranged from 8.9% to 26.4% The proportion of patients identified with an alcohol disorder that were counselled or referred over two years reached 50% for the intervention group and only 23.7% for the controls.

Qualitative findings from the study showed 1) that alcohol screening was easily integrated into the nursing vital sign protocol; 2) explicitly linking alcohol with a disease outcome (i.e., hypertension) was important for patients; and 3) appropriate handoffs from screening nurses to clinicians who did brief interventions were important.

PPRNet's second study, Implementation of Alcohol Screening, Intervention and Treatment in Primary Care (AM-TRIP), was designed to evaluate the efficacy of an intervention to increase alcohol screening, diagnoses of alcohol disorders, brief intervention, and alcohol medication use in patients with diabetes or hypertension. This is a four-year group-randomized cross-over study to assess the impact of academic detailing, quality improvement assistance, best practice sharing, and audit and feedback as opposed to audit and feedback alone on alcohol screening. The study, which began in 2008, introduced simplified screening based on updated guidelines, including a single binge-drinking question, a symptom checklist to identify an at-risk drinker or alcohol use disorder, and a brief intervention message referring the patient to the NIAAA website, "Rethinking Drinking", which provides strategies for cutting down and support for quitting. In addition, the intervention group received site visits that included discussion of using medications for people with alcohol disorders, to test the possibility of medical management for patients who did not have access to, or wouldn't use, substance-abuse treatment programs. After the first year of the study, the control and intervention groups were switched.

Preliminary findings after two years showed that 92% of patients across the practices had been screened, indicating that simplified screening based on updated guidelines has been widely adopted by the study practices. However, at-risk drinking is being under-identified, compared to national benchmarks. Use of medication for alcohol-use disorders is beginning to occur.

These projects demonstrate widespread adoption of alcohol screening among participating volunteer practices, something that had not happened before in many practices. The results also demonstrate that involvement of non-physician staff trained to use simple EHR-based protocols can facilitate this adoption. However, brief intervention for at-risk drinkers and treatment for alcohol use disorders has not been adopted to the same degree as screening in these primary care practices.

PPRNet is a practice-based research network consisting of practices that are principally devoted to primary care and united behind an ongoing commitment to research and quality improvement activities. The organization turns clinical data pulled from its practices into actionable information by providing members with quarterly performance reports on a wide range of clinical measures; empirically tests theoretically sound interventions through research projects involving member practices using electronic health records (EHR); and disseminates information on successful interventions to members and non-member practices. As of October 2011, PPRNet had 218 physician practices, representing over 1,219 health care providers, and approximately two million patients located in 44 states.

"I think the typical mindset of probably most of the healthcare community is that there are people that are alcoholics and people that are non-alcoholics. But actually, in medical settings, the majority of people who are having problems with alcohol adversely affecting their health in some way don't meet either criterion; they just drink too much for their health. We're trying to help medical practitioners realize that the patient with abuse or dependence that has been recognized for years is the tip of the iceberg. We're trying to help them find the people who don't meet those criteria yet have problems with alcohol that are affecting their health." **Steven Ornstein, MD**

Abstract:

UNDAUNTED COURAGE: The Legacy of a Change Leader

By Thomas Mosgaller, MS

The key to bringing about transformation in an addiction treatment system – or any system – is an effective change leader. It is one thing to have the intellectual capital, research, and knowledge essential to making change, but it's another to have the will and capacity to execute the process. This is where the change leader is key. This presentation is named for the book *UNDAUNTED COURAGE*, by Stephen Ambrose, which chronicles the Lewis and Clark expedition and illuminates the role of Meriwether Lewis as one of the great change leaders in North American history.

Two critical aspects of the change leader's role and responsibility are to act as torchbearer for the transformation and to ensure sustainability of the process by building continuous improvement in at the start. One model for understanding how transformational change takes place is the "diffusion of innovation" bell curve described by Everett Rogers. At one end are the innovators trying new things that no one else is doing; next are the early adopters, willing to experiment and taking on quality improvement. The tipping point comes when 25% of the people are engaged in the process and creating the momentum that will transform an organization or industry.

There is always a point in transformational change where there is a gap or chasm between where an organization is and what is coming in the future. The change leader can see across the chasm, understand what is coming, and work through the intermediary period of inelegance to bring about the necessary transformation. But that's not the end of the process. Continuous improvement has to be built in to ensure that the organization doesn't slip back to where it started.

One model for creating breakthrough change and quality improvement that has reached the tipping point in the United States is a methodology called NIATx (formerly the acronym for the Network for the Improvement of Addiction Treatment), developed specifically for behavioural healthcare organizations by the University of Wisconsin-Madison's Center for Health Enhancement Systems Studies. The model is built upon a Plan-Do-Study-Act cycle, which starts with creating a vision of what an organization wants to be and then enlisting the change leader to engage people within the organization to build the base and generate ideas. At the execution or "Do" phase, it is important that the organization have standardized processes as a baseline from which to build and measure results.

Five principles undergird the NIATx model:

1. Always start with the customer in mind. Do walkthroughs of your system to experience what it is like for the people who use it.
2. Pick something to improve in your organization that keeps the CEO up at night so that it will make a difference and create a powerful story in your organization.
3. Choose a powerful change leader. That person could be anyone in the organization, but must have the respect of his or her peers and a passion for improvement of the way you do business.
4. Learn from what others are doing well outside your field.
5. Practice rapid-cycle improvement: plan the change, execute it, study the results, and act on them – i.e, adopt the change, adapt it, or abandon it. This is a learning process; failure is celebrated because it provides valuable information for the next cycle.

When service providers seek to change their treatment approach in the communities in which they work, the concept of asset-based community development provides an important lesson: build upon the community's assets, not its deficiencies. Ask what can people do for themselves, what can they do with a little help, and what do they need others to do for them? The institution must not overpower the capacity of communities to care for one another. Change leaders – including most of the participants in this Symposium – work in the gap between the institution and the community.

What are the characteristics of an effective change leader? He or she is respected, has the ability to influence others, works well in the "gap," and has a great sense of humour. The change leader also knows that the source of problems is most often the existing system itself and not the people working in that system. Good change leaders can live with the tension between the world as it is and the world we would like it to be. Good change leaders spend their lives living in that gap.

"We're blaming people for systems problems, and if we would just focus on the improvements as opposed to blaming people, we could get a lot further down the road than the way in which many of our organizations do it. We're all in this together – we're part of one system."
Tom Mosgaller, MS

Abstract:

ORGANIZATIONAL CHANGE – GETTING RESEARCH INTO POLICY AND PRACTICE

By Philip Davies, PhD

To ensure that policy making is backed by the best available evidence, organizations need to have an explicit knowledge-management strategy that integrates high-quality, critically appraised research evidence with their own organizational knowledge and expertise. When you bring together these two worlds, you have a very powerful tool to achieve more effective policy making.

There are many barriers to successful research utilization, including differing ideas about the nature of evidence itself. Policy makers tend to want evidence to be readily available and to provide a narrative with a clear message; researchers are looking for the generalizable and view their work over a longer time frame. Not all evidence is of equal value; some may be based on poor research or a single study; hence the need for systematic reviews and statistical meta-analysis. Good decision-making requires good evidence. Even the best evidence is probabilistic; it can point the way and support better judgement, but not tell you what to do.

It is extremely rare in government for research to be used instrumentally, where evidence is gathered and is directly reflected in policy. More commonly, research evidence is used conceptually for general enlightenment, where results influence actions, but in less specific, more indirect ways. The most frequent use of research evidence is to legitimatize pre-ordained policy. We call this symbolic use "policy-based evidence."

Policy making has to be seen as a process, not an event. Nor is it a rational process; it is diffuse and haphazard. Policy starts in the political process and can take many years to work its way up into a policy document. This means research transfer rarely involves a single study but should be a synthesis of knowledge through all the stages of the process.

How does research get into policy and practice? It's not enough to rely on passive diffusion of research evidence. That assumes policy makers actively seek out evidence and appraise it appropriately. They don't. Research evidence needs to be synthesized, worked through interpersonal networks by credible retailers, and disseminated via guidelines. But receiving and absorbing research still doesn't equal research use. Evidence needs to be worked and embedded via multiple routes of influence: politicians and their advisors, civil service policy makers, front-line delivery staff, multiple media, special interest groups, and the public. One of the most powerful ways to get evidence into policy is to get to know the right people in the right decision-making circles at the right time. If you are not in the interpersonal network of the policy-making process, you are not going to be successful at getting evidence into policy. You need to sell it, and that is the challenge.

Practical strategies for ensuring that research gets into policy include:

1. Create incentives. For policy makers, include analysis and use of high-quality evidence as a key competency and build it into their appraisal and rewards system. Incentivize researchers by making communication a key competency.

2. Plan strategically. Determine what the key policy and practice issues will be at different time periods in the future and what research knowledge will be needed in those time periods. Start doing the research now.

3. Find the right "KT moment." Understand and work with the policy timetable – e.g., legislative timetable, impact assessments, government spending reviews – to find opportunities to get evidence into policy.

4. Make research evidence easily accessible. This means not only physical access but cognitive access, through means such as research literacy classes and access to databases on people's computers. Bridge the communications gap between researchers and civil servants. This includes providing graded entries to research evidence – from bullet points to executive summaries to 25-page reports. Summaries should be well-written, with clear messages, indications of relevance for decision-making, and contextual factors that affect local applicability.

5. Use knowledge brokers. Brokers can manage the creation, diffusion, and use of knowledge; serve as the interface between creators and users of knowledge; and/or enhance access to knowledge by providing training to knowledge users.

"It's really criminal that in many aspects of health care, including addiction, we actually know an awful lot. We've got good models of practice, but we're not utilizing them, and somebody comes along and they reinvent the wheel, and somebody reinvents that wheel."
Philip Davies, PhD

PART 4

IMPLICATIONS FOR PRACTICE AND POLICY:

What We Need to Do and How to Do It

The convergence of epigenetics, developmental neuroscience, and behavioural neuroscience tells us that addiction is a chronic disease of the brain with its roots primarily in toxic stressful experiences in early childhood. The Faculty brought more evidence to the table that not only reinforces this definition but demonstrates the complexity of addiction and its ramifications for families and communities, and for the practitioners and policy makers responsible for creating and implementing solutions. What should we do with this knowledge?

Implications for Policy

Addressing the family as client

Addiction is a family affair. Its roots, in most cases, can be traced to family dysfunction, and its transmission from generation to generation occurs with disheartening predictability. Yet addiction treatment programs are designed more often than not to focus on the individual. A paradigm shift is required in both policy and practice to recognize and treat the family as client. The Alberta government has taken a major step in this direction by adopting a family-based, more comprehensive approach to prevention and treatment in its Addiction and Mental Health Strategy. Implementation of these changes will need to include funding mechanisms to accommodate family interventions at the practice level. Training and professional development opportunities to assist clinicians in accommodating to a family intervention model will also need to be developed in conjunction with the post-secondary and academic community and professional bodies.

Engaging the primary care system

Research from a variety of sources indicates that addiction is under-diagnosed in the general population. Primary care is a logical setting where screening on a public health level, early intervention, and referral into community programs can be carried out most effectively. Alberta's evolving system of Primary Care Networks (PCNs) offers a powerful vehicle for integrating addiction into primary care and an opportunity to create a common entry point in the healthcare system for these activities and services consistent with community needs. PCNs are organized around multi-disciplinary teams and incorporate chronic

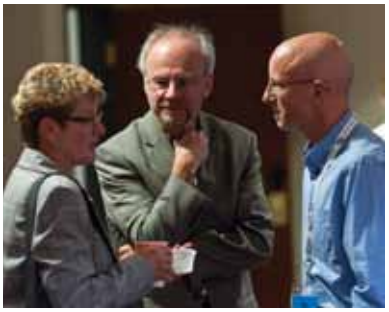
disease management, two features that particularly lend them to addressing addiction screening, intervention, and monitoring. A number of issues regarding the role and governance of PCNs are still under discussion and need to be clarified, including the appropriate balance between centralized standardization and local flexibility; responsibility for decision-making and setting priorities; evaluation; and funding models for clinician services and physical capacity.

There was discussion among Symposium participants of the role of peer support models in extending capacity of the system. Questions remain as to how to integrate peer group and other non-professional support with respect to issues of quality and standards for practice. One possible approach would be to have facilitated peer groups reporting to primary care practitioners for monitoring as components of chronic care management.

Continuity of care

Currently, there are many gaps in the continuity of care for addiction. The pathway from detox through treatment, after care, self-management, and ongoing monitoring is convoluted. The dots need connecting, both for clients and for the clinicians who treat them. Some PCNs are piloting clinical pathways in depression. A clinical pathway for addiction is needed. Participants felt that a clinical pathway could provide needed standardization and linkages, but wondered if the complexity of addiction lends itself to a single clinical pathway. Alberta Health Service's (AHS) Addiction and Mental Health Clinical Network – which includes academics, researchers, clinicians, program developers, educators, physicians, and psychiatrists – is looking at the evidence in a number of areas and is a promising vehicle to assist in developing an addiction pathway in Alberta.

Meanwhile, Alberta Health Services is taking a major step by establishing strategic clinical networks (SCNs) – collaborative clinical strategy groups that bring the perspectives of all stakeholders – clinicians, policy makers (government), researchers, operations and strategy leaders, key community leaders, patients and families – together to develop strategies (e.g., clinical pathways and care innovations) to achieve improvement in patient outcomes and access to health care. SCNs will also address population and geographic variations in delivery of care and integrate strategic research and education into programs. The Addiction and Mental Health Strategic Clinical Network is among the first to showcase how this system will work.



Training and professional development

The science of addiction has advanced so significantly over the past 20 years that practitioners and policy makers who trained 20 or 30 years ago or more may be using approaches that are not consistent with current best practices. In an early initiative, the province's Addiction and Mental Health Clinical Network adopted a concurrent-capable approach to ensure that staff can better identify, manage, and treat people who present to an addiction service with concurrent disorders. More training and professional development programs, similar to the network's Provincial Concurrent Capable Learning Series, are needed to ensure that clients receive evidence-based treatment at every entry point in the system and in the community.

Ensuring evidence-based policy

As Alberta's addiction and mental health system evolves, it is essential that policy and program development are based on sound evidence. Too often there is a gap between policy makers and researchers as to what constitutes high-quality evidence. The ability to use and analyze evidence should be built into policy makers' skills and competencies, as well as their appraisal and reward system. Infrastructure at the policy level should provide policy makers with easy access to databases, information specialists, and research literacy training to hone their analytical skills.

Communicating about addiction

It is clear from the research conducted in Alberta by the FrameWorks Institute that there are many gaps between what experts know and what the general public understands about addiction. Any policy change with respect to addiction services needs support from the public and its legislative representatives. The FrameWorks research has produced communication strategies that have potential to move public perception from seeing addiction as an individual issue to seeing it as a collective issue. When the public makes this shift, it is much more willing to endorse policy programs that support public solutions to the issue of addiction. This research should be used as a basis for re-evaluating and reframing communication about addiction at all levels of policy and practice in Alberta.

Implications for the Practice Community

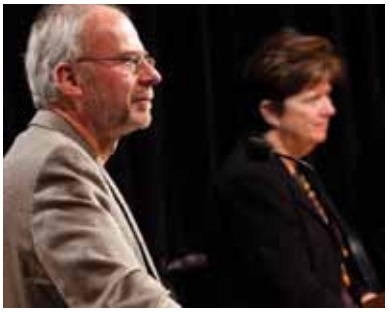
Screening at the primary care level

Under-diagnosis of addiction in the population suggests the need for more and better screening. While primary care offers the most efficient opportunity to carry out screening at a public health level, physicians may be hard-pressed to add another responsibility to their already heavy workload. There are screening programs that are simple to implement and have shown some success at the primary care level. For example, the Adverse Childhood Experiences (ACE) questionnaire measures risk for a wide range of mental and physical health and addiction problems. The patient can fill out the questionnaire at home by hand or online. Another example involves alcohol screening and brief intervention for at-risk drinkers or referral to treatment for alcohol-use disorders. Because heavy drinking affects blood pressure and blood glucose control, alcohol screening and counselling also have potential to improve clinical management of hypertension and diabetes. Both types of screening are simple to incorporate into a primary care setting and can be carried out by non-medical staff, making a good case for uptake by busy physicians.

Training for treating complexity

Addiction is now recognized as a more complex problem than previously understood, presenting a challenge to practitioners in every setting. The science-based developmental story of addiction must be deeply embedded at the core of all training and professional development programs for those who work in the addiction field.

Research shows that addiction seldom occurs in isolation, in the individual or the family, but comes in "packages" of multiple addictions that interact with and reinforce one another. This means clinicians need to have the capability to assess and manage cases across a number of disorders. Compelling evidence of intergenerational transmission means intervention needs to involve the whole family as client. Acknowledgement that addiction is best treated in a chronic disease management model requires a long-term stepped intervention that includes a bridge from therapy to sustained recovery. All of these developments represent a paradigm shift. Clinicians who have been working within the system, especially those who trained in an earlier era, may need to adjust their approach and align their capabilities to current best practices. Training and professional development programs and certification for clinicians and other practitioners must address these issues in order to provide the needed capacity to the addiction and mental health system.



Developing teamwork and linkages

The complexity of addiction and its far-reaching effects on family and community require a multi-disciplinary approach including teamwork and linkages to a wide range of community supports. Connections made between and among primary care physicians and practitioners working in the wide range of treatment programs are needed to ensure continuity of care. Practitioners in various community treatment programs should investigate opportunities to work with Primary Care Networks in their local areas. Links between clinicians and disciplines outside the health care system – such as justice, corrections, education, and child and family services – are needed to facilitate early intervention and ensure continuity of care from multiple entry points. Most critically, all working within this complex system need a common framework of understanding regarding the development, treatment, and management of addiction in order to achieve real change and more positive outcomes reflecting current best practices.

Community as family

The addicted person and his or her family are ultimately members of a larger community that must be involved to provide supports for healthy development and prevention as well as intervention and successful management. Practitioners can be instrumental in normalizing addiction in the community so that the addict is recognized as one of us and addiction is seen as a collective social issue. They should use the tools of framing at every opportunity to deliver the core story of early brain development and proven metaphors, such as brain faultlines, to educate families and the community and gain their support for prevention and intervention initiatives.

Aboriginal communities are an example in which a whole community can be mobilized to tackle the problem of addiction through a defined multi-step cultural and spiritual process based on a common history of trauma. The Wellbriety Movement is an example of such a process and may offer solutions for some of Alberta's Aboriginal communities.

Incorporating evaluation and quality improvement

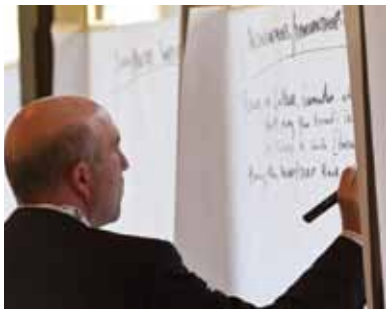
Clinicians and other workers in the addiction field need to incorporate evaluation and quality improvement into their practice to ensure that their interventions are based on the best available knowledge, result in better outcomes, and respond to the needs of their clients. This will entail adopting systematic methods of quality improvement and data collection, and undergoing training in these areas where needed. Electronic medical records technology will be an important tool for supporting decision-making and for sharing and standardizing practices, wherever appropriate, across the system. A critical first step in assessing any system is to walk through it, from end to end, in the client's shoes.

Implications for Research

Research into prevention and intervention strategies

Now that a compelling body of research points to addiction as a brain-based disease rooted primarily in early adverse experiences, it is time to put more research effort into integrating this knowledge into public health prevention and intervention strategies. What supports are effective for families at risk? Where is screening most effective and cost-efficient? Should screening programs be universal or targeted? Much more research into these and other questions of prevention and intervention is needed. The development of Strategic Clinical Networks in Alberta will create better links between the policy, practice, and research communities by embedding research networks. This will provide opportunities for policy and practice to influence the research agenda as well as opportunities for knowledge transfer in the other direction.

Standardization, evaluation, and quality improvement



Evaluation and quality improvement must be embedded in all new addiction programs and practices to ensure that they are evidence-based and sustainable. Before introducing any change into a system, it is essential to ensure that the system has standardized processes as a baseline from which to build and measure results. It is also critical that change takes place in measurable, discrete actions so that there is a direct correlation between a particular aspect of change and outcomes. Failure should be viewed as a learning experience not as a setback. Electronic medical records (EMR) technology offers potential for generating large volumes of data across the system and applying research to evaluate programs and support decision-making.

Researcher as communicator

Responsibility for getting research evidence into policy and practice does not belong to one domain alone. Researchers need to understand how policy is made and how they can fit into the process by providing timely information in succinct, well-presented summaries with clear messages. This means researchers need to incorporate communication as a key competency in their training and to seek opportunities to build links with decision-makers.

Research as part of the strategic planning process

It is common practice for governments and organizations to develop visions looking five, 10, 20, or more years into the future. Part of this process includes analysis to anticipate key policy and practice issues that will arise. Research planning should be a component of this process to ensure that appropriate bodies of evidence will be available to support future decision-making.

Closing Comments

The 2011 Recovery from Addiction Symposium built upon the groundwork laid down by RFA 2010, expanding upon the scientific learnings of the first Symposium and moving Alberta closer to the goal of a comprehensive, evidence-based addiction service delivery system. Faculty presentations took participants from a deeper understanding of the neurobiological and neurobehavioural underpinnings of addiction to practical steps they can apply as change agents in their own work settings to bring scientific knowledge to bear on policy and practice. They concluded the week with a renewed commitment to the significant role they are playing in the Alberta Family Wellness Initiative's unique three-year strategy to improve the lives of children and their families in Alberta.

Participant Comments

"It's been an excellent week – very well organized. This year the process was a little more balanced, which created even more capacity for learning."

"It was an amazing experience – a whole year of information and learning packed into a single week."

"As a practitioner and teacher, I have conversations with patients and learners. This experience was about how to make the invisible visible. It has helped me think differently about patients. It's provided a new perspective for treating individual patients."

"I'm excited. I was here last year and I was somewhat ambivalent. This year I am very pleased. On the whole, it is a much more balanced program with broader topics. I enjoyed that. And there is some specific information that I can take back to implement as a manager, and that excites me."

"It's been incredible. I've never been part of something so well run. It's been very powerful for me. I see so much application to my work. I take great comfort in the idea that the small can change the big. I can also see the power in the multi-disciplinary aspect, which is becoming more common in addressing problems."

"What stands out mostly is the theme of childhood trauma and its impact on us today. This is causing a shift for me. I'm a psychologist. We tend to shove patients into categories like depression and anxiety, but that's smoke. We have to get to what's behind it. I feel I've lost my way as a therapist, putting aside what is good and valuable to do what's quick. It's like slapping a Band-Aid on a sliver instead of pulling it out. This experience tells me to go back to why I was trained so that at the end of the day I can feel good about what's been done."

"There's been a really nice progression of content over the week. It seems like there's a lot of thought behind the way the material was sequenced. It's been building to a deeper level day by day. And there's been a real progression from last year to this year. I feel a definite application to my work. I've been having phenomenal discussions with my colleagues. This will help me make a real difference in the way I work."

"It's been absolutely fantastic. It was insightful and forward looking of the Norlien Foundation to partner with Alberta Health Services to effect change for the better. I didn't know we'd made a paradigm shift until I got here. The problem has seemed too big – like how do you eat an elephant one bite at a time. Norlien knows we can promote healthy families and communities. Now we can be part of the problem or part of the solution."

"The networking here has been very, very valuable. There are so few opportunities for all disciplines – research, practice, policy – to come together like this. It's been very crystallizing. I'm very, very grateful. It was most inspiring."

"I'm working on clinical pathways in primary care, and this experience has been totally relevant. The talk on the Wellbriety Movement was an eye-opener. It helps me to frame and understand why the Aboriginal population has so many challenges and helps me to know how to intervene."

"This has been inspiring. I think of it as brain candy. It's given me some new ideas and new ways of framing information differently. It affirms what I knew but gives me a fresh look at it and another way to take it back into the community."

"This has been exactly what I need. I started in Mental Health and Addiction just last year. I didn't know a soul here last year and all the information was new to me. It's nice to see people making connections and seeing that what we're learning here can be incorporated into what we do. We're able to apply what we're learning and I hope that will continue. It's helpful that senior people in AHS and Alberta Health and Wellness are supportive. That makes it easier to move on an action plan."

"This is important. I teach mental health to nursing students and we need more on addiction. There's so much confusion. Some still think it's a choice."

Appendix I

SYMPOSIUM PEOPLE: DEVELOPMENT AND MANAGEMENT

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

Elaine Broe, MA, Director, Learning Solutions, Leadership Development, The Banff Centre

Joseph 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, Professor and Chair Department of Psychiatry, University of Calgary

Nancy Mannix, JD, Chair and Patron, Norlien Foundation

Thomas McLellan, PhD, Director, Center on Substance Abuse Solutions, University of Pennsylvania

Garrett O'Connor, MD, President, Betty Ford Institute

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

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

Paula Tyler, President, Norlien Foundation

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

Arlene Weidner, RN, MSc, CHE, Healthcare consultant

Design Committee

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

Elaine Broe, MA, Director, Learning Solutions, Leadership Development, The Banff Centre

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

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

Garrett O'Connor, MD, President, Betty Ford Institute

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

Arlene Weidner, RN, MSc, CHE, Healthcare consultant

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

Kate Pedlow, LLB, General Counsel and Program Officer

Nicole Sherren, PhD, Scientific Director and Program Officer, Symposium Lead

Kim Ah-Sue, MA, Program Officer

Marisa Etmanski, Director of Edmonton Office

Alisha Devji, MPH, Program Assistant

Heidi Dunstan, Executive Assistant and Special Projects

Teresa Stewart, Executive Assistant

David Elton, PhD, Policy Advisor

Ralph Strother, MD, Consultant

Arlene Weidner, RN, MSc,CHE, Healthcare consultant

Kate Stenson, Administrative Support

CJ Lemke, Administrative Support

Appendix 2

SYMPOSIUM PEOPLE: PRESENTERS AND FACULTY

FACULTY

Claudia Black, MSW, PhD

Faculty Presenter

Clinician and author. Dr. Black is an addictions and codependency expert, author, and trainer recognized for her pioneering work with family systems and addictive disorders. She designs and presents training workshops and seminars to professional audiences in family service, mental health, addiction, and correctional services. She is the Senior Editorial Advisor for Central Recovery Press and serves as Senior Clinical and Family Services Provider for Las Vegas Recovery Center. Dr. Black has been a keynote speaker on Capitol Hill in Washington, DC, and on Parliament Hill in Ottawa, ON.

Patrick Carnes, PhD, CAS

Faculty Presenter

Executive Director, Gentle Path Program, Pine Grove Behavioral Health Center (Hattiesburg, MS). A well-known speaker and author on addiction and recovery issues, Dr. Carnes is the primary architect of Gentle Path treatment programs for the treatment of sexual and addictive disorders. He is also the Chief Executive Officer of New Freedom Corporation and New Freedom Publications in Carefree, AZ.

Don Coyhis

Faculty Presenter

President, White Bison, Inc. Mr. Coyhis is a member of the Mohican Nation from the Stockbridge Munsee Reservation in Wisconsin. He is the founder of White Bison, Inc., an American Indian non-profit corporation dedicated to developing culturally relevant treatment, prevention, and recovery materials to support the Wellbriety Movement. The Wellbriety Movement is an effort to create the opportunity for individuals, families, communities, and nations to live sober and healthy lives that are balanced emotionally, mentally, physically, and spiritually.

Philip Davies, PhD

Faculty Presenter

Executive Director, Oxford Evidentia. Dr. Davies' company is a U.K.-based research consultancy that undertakes research and analysis worldwide to support better policy making. Dr. Davies has over 30 years' experience in academic life, the U.K. senior civil service, and the private sector, including service as Director of Policy Evaluation and Deputy Director of the Government Social Research Unit in the Cabinet Office in the U.K. He works in a number of countries to develop evidence-based policy and practice in education, health, social welfare, crime and justice, and international development.

Vincent Felitti, MD

Faculty Presenter

Clinical Professor of Medicine, University of California. Dr. Felitti is Co-principal Investigator (with Robert F. Anda, MD, at the Centers for Disease Control) of the Adverse Childhood Experiences (ACE) Study, ongoing collaborative research between the Kaiser Permanente Medical Care Program and the CDC that explores the relationship of adverse experiences in childhood to health, well-being, disease, and death decades later. Dr. Felitti founded the Department of Preventive Medicine at Kaiser Permanente in 1975 and served as Chief of Preventive Medicine until 2001. Under his leadership, major health-risk abatement programs were developed for obesity, smoking, and stress.

Nathaniel Kendall-Taylor, PhD

Faculty Presenter

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

Thomas McMahon, PhD

Faculty Presenter

Associate Professor, Departments of Psychiatry and Child Study, Yale University School of Medicine. As a clinician, educator, and researcher, Dr. McMahon is interested in ways developmental principles can be used to expand understanding of substance abuse, family process, and child development. He is particularly interested in parenting as a treatment issue for substance-abusing men. He is a member of the College on Problems of Drug Dependence and the Society for Research in Child Development.

Michael Meaney, PhD

Faculty Presenter

James McGill Professor, Departments of Psychiatry, and Neurology and Neurosurgery; Director, Program for the Study of Behaviour, Genes and Environment, McGill University. Dr. Meaney is interested in the mechanisms by which adversity in early life might alter neural development so as to render certain individuals at risk for pathology later in life, including chronic illness, depression, anxiety disorders, schizophrenia, and drug abuse.

Thomas Mosgaller, MS

Faculty Presenter

Director of Change Management, NIATx, University of Wisconsin-Madison. Mr. Mosgaller has over 25 years of experience in organizational and community development as a manager, teacher, and consultant to the public, private, and non-profit sectors. He served as the City of Madison's Director of Organizational Development and Training for 13 years and was Vice President of Organizational Development and Human Resources with Marshall Erdman & Associates. In 2006, he joined NIATx (Network for the Improvement of Addiction Treatment Services), which works to improve the delivery of community-based health services, including drug/alcohol treatment and mental health services.

Nicholas Myers, MBBS, MRCGP

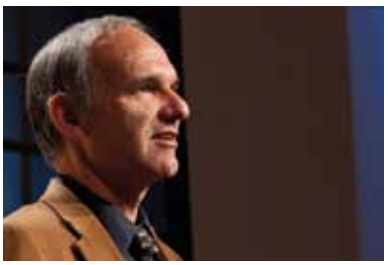
Faculty Presenter

Medical Director, Primary Care, Alberta Health Services. Dr. Myers combines his family practice in Calgary with his post with AHS and has been heavily involved in development and implementation of Primary Care Networks since their inception in 2003. He was recently Deputy Head of the Department of Clinical Family Medicine, AHS, in Calgary and formerly worked for 11 years in rural Alberta and British Columbia.

Susan Nall-Bales, MA

Faculty Presenter

Founder and President, FrameWorks Institute; Visiting Scientist, Department of Society, Human Development, and Health, Harvard School of Public Health. Ms. Bales is a contributing member of the National Scientific Council at Harvard University's Center on the Developing Child. A veteran communications strategist and issues campaigner, she has more than 30 years of experience researching, designing, and implementing campaigns on social issues and is the author of numerous articles on public opinion and media.



Steven Ornstein, MD

Faculty Presenter

Professor, Department of Family Medicine and Graduate Studies, Medical University of South Carolina. Dr. Ornstein is the founder and director of the Practice Partner Research Network (PPRNet) – one of the largest practice-based research networks in the United States and the only one among users of a common electronic health record. He has led and participated in many research studies using information technology to improve the quality of primary health care.

Cathy Pryce, BScN, MN

Faculty Presenter

Vice President, Addiction and Mental Health, Alberta Health Services. Ms. Pryce is responsible and accountable for providing vision and leadership to a diverse team in the development, design, and implementation of provincial addiction and mental health Services in support of the business plan of Alberta Health Services.

MODERATOR

Steven Lewis, MA

Health Policy and Research Consultant

Steven Lewis is Adjunct Professor of Health Policy at the University of Calgary and Simon Fraser University. Prior to resuming a full-time consulting practice, he headed a health research granting agency and served as CEO of the Health Services Utilization and Research Commission in Saskatchewan. He has served on boards and committees of the Governing Council of the Canadian Institutes of Health Research, the Saskatchewan Health Quality Council, and the Health Council of Canada.

INTERDISCIPLINARY COHORT LEADS

Peter Butt, MD, CCFP(EM), FCFP

Associate Professor, Department of Family Medicine, University of Saskatchewan. Dr. Butt is Medical Director of the department's Division of Northern Medical Services, which provides clinical services to the northern regional health authorities and First Nations. His clinical and research work focuses on substance-abuse disorders.

Irving Gold, MA, MCA

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

Carol Gray, RN, BN, MN

Healthcare consultant. Ms. Gray 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 recently retired from the position of Vice President of Population and Public Health, Alberta Health Services.

Arlene Weidner, RN, MSc, CHE

Healthcare consultant. Ms. Weidner has over 30 years of healthcare experience in clinical, research, academic, and administrative settings, including 22 years in leadership positions through health system regionalization in Calgary. She has been a Health System Surveyor for the Canadian Council on Health Services Accreditation for over 10 years and has an adjunct appointment with the Faculty of Nursing at the University of Calgary.

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 and Associate Dean, Division of Community Engagement and Social Responsiveness (CESR), Faculty of Medicine, University of Alberta

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

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

Mel Slomp, MA, Director, Knowledge and Strategy, Community Treatment and Support, Addiction and Mental Health, Alberta Health Services

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 – Collaboration of Research, Policy, and Practice Areas

Lisa Barrett, RN, MN, Manager, Primary Care Support, Access and Early Intervention, Addiction and Mental Health, Alberta Health Services

Karen Bozocea, BA, MEd, Manager, Community Initiatives, Access and Early Intervention, Addiction and Mental Health, 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, Program Manager, Community Addiction and Mental Health, Addiction and Mental Health, Central Zone, Alberta Health Services

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

Annette Lemire, MSW, RSW, Manager, Community Health, Alberta Health and Wellness

Sandi Roberts, MEd, Educational Leader, Safe Communities Secretariat, Justice and Attorney General, Government of Alberta

TEAM 3 – Collaboration of Research, Policy, and Practice Areas

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

David Cawthorpe, PhD, Coordinator, Research and Evaluation, Psychiatry, Alberta Health Services, and Adjunct Associate Professor, Psychiatry, University of Calgary

Nancy Fraser, MSc, Executive Director, Acute and Tertiary Care, Addiction and Mental Health, 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 and Wellness, Alberta Justice and Attorney General

Edith Zuidhof-Knoop, MA, Manager, Hinton and Area Addiction and Mental Health, Alberta Health Services

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, Director, Community Treatment Initiatives, 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, Centennial Centre, Central Zone, Alberta Health Services

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

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

Silvia Vajushi, MSW, RSW, Executive Director, Community Health, Alberta Health and Wellness

TEAM 5 – Integration of Services in Care Continuum

Allan Aubry, Director, Addiction and Mental Health, Edmonton Zone, Alberta Health Services

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

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

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

Kent Riddle, Alberta Health Services

Beverley Thompson, BRE, RN, CPMHN(C), Director, Addiction Services, Claresholm and Southern Alberta Forensic Psychiatry Centres, Alberta Health Services

Doug Urness, MD, FRCPC, Psychiatrist, Centennial Centre for Mental Health and Brain Injury, 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 – Collaboration Between Academia and Policy and Practice Areas

Nadine Gall, Knowledge Management Consultant, Alberta Health Services

Elizabeth Johnson, LLB, Judge, Provincial Court of Alberta, Criminal Division

Tracy MacDonald, MA, Site Manager, Addiction and Mental Health, Edmonton Zone, Alberta Health Services

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

Paula Robeson, BN, MScN, Knowledge Broker, Canadian Centre on Substance Abuse

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

Darlene Wong, BA, LLB, Judge, Edmonton Drug Treatment and Community Restoration Court, Criminal Division, 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

Lauren Allan, PhD, Behavioural Health Consultant, Shared Mental Health Care, Alberta Health Services

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

TEAM 8 – Primary Care Practice Settings

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

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

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

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

Adele Royer, RN, Project Coordinator/Improvement Facilitator, Chinook Primary Care Network, Alberta Health Services

Nolan Schaaf, RN, Improvement Facilitator, Chinook Primary Care Network, 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

Jacqueline Abbott, BMus, LLB, Crown Prosecutor, Calgary Drug Treatment Court

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

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

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

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, Addiction and Mental Health, Health Promotion, Disease and Injury Prevention, Alberta Health Services

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

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

Reynold Sookhoo, RN, BN, Director, Residential Services, CASA Child, Adolescent and Family Mental Health

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

Wendy Tink, MD, CCFP, FCFP, Family Physician and Clinical Faculty, Family Medicine, University of Calgary

AREA 7: Prevention and Early Intervention

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 (R2), Family Medicine Program, University of Calgary

Glen Raine, Addiction Counselor, Stoney Trail Wellness Centre

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

Jessica Tink, BSc, Administrative Addictions Coordinator, Department of Family Medicine, 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

Hazel Bergen, RSW, BSW, Associate Director, Enviros Wilderness School Association

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

Suzie LeBrocq, BA, MPhil, Clinical Director, Aventa Addiction Treatment for Women

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

Debra Lussier, Project Manager, Forensics, Addictions and Claresholm Centre, Alberta Health Services

Jim Marteniuk, MSA, RSW, Operation Manager, Addiction Centre/Network Program, Foothills Medical Centre, Alberta Health Services

Tony Temprile, Manager, Youth Addiction Services, Calgary, Zone 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

Marilyn LaBrecque, RSW, Community Addictions Services Administrator, Addiction and Mental Health, Alberta Health Services

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

Bina Nair, MD, Child Psychiatrist, CASA Child, Adolescent and Family Mental Health Services

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, Manager, Adult Counselling and Prevention Services, Addiction and Mental Health, Edmonton Zone, Alberta Health Services

Patrick McNulty, MA, Addiction Counselling Supervisor, Addiction and Mental Health, Central Zone, Alberta Health Services

Korie-Lyn Northey, BA, RSW, Community Addiction Services Administrator, Addiction and Mental Health, Alberta Health Services

Wayne Spychka, Senior Manager, Community Health, Alberta Health and Wellness

Craig Staniforth, BA, Clinical Manager, Addiction Clinic Red Deer, Addiction and Mental Health, Central Zone, Alberta Health Services

Liana Urichuk, PhD, Director, Information and Evaluation Services, Addiction and Mental Health, Edmonton Zone, 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

Sue Newton, MN, Vice President and Operations Director, Health Upwardly Mobile, Inc.

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

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

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

Karen Sliwkanich, Senior Manager, Cross Ministry Services, 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

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

Diana Krecsy, RN, BN, MEd, Chief Executive Officer, Calgary Drug Treatment Court

George McBride, MSW, Supervisor and Manager, Adult Outpatient, Adult Addiction Services, Alberta Health Services

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, Health Promotion, Disease and Injury Prevention, Alberta Health Services

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

Trevor Inaba, RSW, MEd, Director, Addiction and Mental Health, South Zone West, Alberta Health Services

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

Appendix 4
LEARNING TOOLS: PERSONAL AND TEAM STRATEGIES

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

Alberta Government Participants

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

"To be champions, to identify system improvements and advocate for them."

"To create dynamic linkages between components of the treatment system in order to increase the client experience in their recovery."

"Identify key messages from the 2010 and 2011 RFA Symposia research and create links to the five strategic directions from Alberta's Addiction and Mental Health Action Plan. The benefit will be to create common language and consistent messaging, adding to our ability to operate as a community of learning."

Alberta Health Services Participants

"My personal goals are related to bringing knowledge to practice, which fits with the team goals of helping Corrections Health improve the effectiveness of the services."

"Include addiction basics and management into our Chronic Disease Management provider education curriculum."

"To raise family members' awareness of the effects of addictions on the family as a whole; to strengthen the invitation to family members to engage in the recovery for themselves."

"Meet with leadership team and discuss/explore how we can incorporate more family-focused treatment into our practice."

"Develop three Science Moments to illustrate and teach an addictions concept using FrameWorks' "faultlines" metaphor; distribute them to staff/colleagues in sphere of influence."

"To measure screening of concurrent disorders, access to treatment for those identified, and retention within Addiction and Mental Health Services once they are linked with our services."

"This year will focus on one of my mental health teams that has recently co-located with the addiction counselor. Guided by information on the science of neurobiology and early childhood experiences from the RFA Symposiums, the clinicians will develop capacity to provide concurrent addiction and mental health treatment and eventually work together as a fully integrated team."

"Improve access to services at the root cause of addictive behaviours (trauma, abuse, family of origin, etc.); increase involvement/engagement of family and significant others in recovery."

"Assure community supports are all available for our disenfranchised population (addictions/mentally ill/forensic patients/clients) once intensive treatment/assessment is complete; assure involvement of clients and families in the development of their community services."

"Identify opportunities to develop an addictions pathway within the next 1-2 years."

"Understand client experience and refine practice as needed to support improved client experience."

"Support the advancement of screening for childhood adverse events in a primary care setting."

"Facilitate discussions based on brain development, early childhood development, and parenting with leadership and front line staff in South Zone Addiction and Mental Health."

Alberta Justice Participants

"Engage with health professionals when I have questions regarding clinical implications of treatment for our participants."

"Apply and disseminate learning through partnerships to create a more trauma-informed team with increased skills in working with people with concurrent disorders."

"Examine current evidence-informed practices in addiction care and implement these practices into my work."

Non-profit Organization Participants

"Use some of the White Bison training to start the healing in the community at large."

"Lead the co-ordination of a Lunch-and-Learn series for our community, using the Alberta Family Wellness Initiative website – it is such an incredible resource."

"Develop family addictions treatment plan for Edmonton area for possible new program."

Primary Care Network and Physician Participants

"Do a replication of the original ACE Study within primary care clinics in Calgary to determine how ACEs may be demonstrated in our population."

"Continue QI work incorporating EMR; implement new teaching module on ACEs and addictions."

"Benchmark within the 2011 RFA cohort the current state of support for the use of the chronic disease management model for the treatment of addictions in Alberta; current state of familiarity with the Wagner Model for chronic disease management."

"Broadly promote the AFWI website as a best-practice knowledge portal to support treatment for addictions."

"Implement the ACE tool in Mosaic PCN's Well Baby Clinic."

Provincial and National Professional and Policy Organizations Participants

"Introduce the key learnings from both Symposia to the curriculum of developmental and advanced psychology in key psychology programs in Alberta universities."

"Influence the way health professionals think about the core story of addiction, particularly around epigenetics and toxic stress, by creating three Science Moment messages. Each Moment will include a basic message with a statement to link individuals with core professional competencies and the resources on the AFWI website."

University Clinical Education and Research Participants

"Discuss how to implement ACE questionnaire into learning environment."

"Develop recommendations for an outcome-based self-regulatory and dynamic monitoring and evaluation system for addiction and mental health services."

"Help build research communities that can respond quickly to address questions in addictions and mental health by collaborating with researchers in this area through the AHS Research Partnership program."

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 new 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. 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 – 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 heath 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 from their own conferences.

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 analysis 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. 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

Creating Connections: Alberta's Addiction and Mental Health Action Plan 2011-2016. (2011). Government of Alberta.

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

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

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

Early Brain & Biological Development: A Science in Society Symposium. Summary Report, Volume 3. (2011). 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 certified Sex Addiction Therapist (CSAT®) 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 addictions and mental health information in Alberta. It contains a searchable directory of addiction treatment services in the Edmonton area.

http://www.knowmo.ca

National Institute of Drug Abuse. 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/

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.

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 federally 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/

REPORTS OF SCIENTIFIC RESEARCH TRANSLATED FOR PROFESSIONAL AUDIENCES

Each of the reports featured below is available online at no cost. See the website address under each report.

A National Survey of Services for Women with Substance Use Issues and Their Children in Canada in 2007: Challenges for Knowledge Translation. (2010). Niccols, A., Dobbins, M., Sword, W., Smith, A., Henderson, J., & Milligan, K. International Journal of Mental Health and Addiction, 8(2), 310-319. doi: 10.1007/s11469-009-9267-4

http://www.springerlink.com/content/u0350285qg9x2rr4/

Adolescent Brain Development and Drug Abuse. (2004). Winters, K. Treatment Research Institute.

http://www.tresearch.org/resources/specials/2004Nov_AdolescentBrain.pdf

Concurrent Substance Use and Mental Health Disorders: An Information Guide. (2004). Skinner, W., et al., Centre for Addiction and Mental Health.

http://www.camh.net/About_Addiction_Mental_Health/Concurrent_Disorders/Concurrent_Disorders_Information_Guide/concurrent_disorders_info_guide.pdf

Drug Addiction as a Chronic Medical Illness: Implications for Treatment, Insurance and Evaluation. (2000). McLellan A.T., O'Brien C.P., Lewis D.L. & Kleber H.D. Journal of the American Medical Association, 284, 1689–1695.

http://www.tresearch.org/resources/pubs/09_McLellan_JAMA.pdf

Integrating Appropriate Services for Substance Use Conditions in Health Care Settings: An Issue Brief on Lessons Learned and Challenges Ahead. (2010). Treatment Research Institute. [White Paper Summary of a Conference]

http://www.tresearch.org/centers/LessonsLearned.pdf

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

Preventing Sexual Violence: An Educational Toolkit for Health Care Professionals. (2010). American Academy of Pediatrics.

http://www.aap.org/pubserv/PSVpreview/start.html

Substance Abuse Treatment: Addressing the Specific Needs of Women. (2009). A Treatment Improvement Protocol (TIP). Series 51 HHS Publication No. (SMA) 09-4426. Rockville: Substance Abuse and Mental Health Services Administration.

http://www.kap.samhsa.gov/products/manuals/tips/pdf/TIP51.pdf

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).

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 behaviors. Addiction is characterized by inability to consistently abstain, impairment in behavioral control, craving, diminished recognition of significant problems with one's behaviors 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

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 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 has 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.

DNA Methylation – Process by which methyl groups are added to certain nucleotides in genomic DNA. This affects gene expression, as methylated DNA is not easily transcribed.

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).

Genome – All the genetic information possessed by an organism.

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 chemically classed as steroids. Cortisol, which is released in response to stress, is the major natural glucocorticoid.

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.

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 the Internet.

Rapid-Cycle Improvement – A technique in which one specific aspect of a process is identified for improvement and small changes are quickly implemented, measured for their effectiveness, and either adopted, adapted, or abandoned.

Secure Attachment – 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.

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 an unpredictable home environment, abuse, or being cared for by a parent who is addicted or mentally ill. Toxic stress in the early years of life damages the developing brain and can lead to lifelong problems in learning and behaviour, and increased risk for physical and mental illness.

Transcription Factor – A protein that controls when genes are switched on or off. Transcription factors bind to regulatory regions in the genome and help control gene expression.

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
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