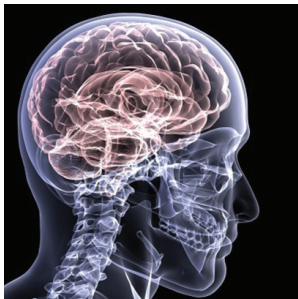


# Video Presentation

## *Health & Neuroscience 2019*



International Conference on  
**Health Care and Neuroscience**

April 08-09, 2019 | Zurich, Switzerland

## Voice it out loud: Viewing the world through Autistic eyes using Assistive Technology

**Tamara C McGill-Carter**

Northwest Indiana Special Education Cooperative, USA

DeVillers and DeVillers (2014) and Iacoboni (2009) discovered that the ability for one to find their voice and actively engage in the world around them, mirror neurons take part in speech production. However, for several sets of children with verbal delays and who are non-verbal who Speech Generating Devices (SGD). The question posed is whether the devices are more effective in school settings considering the nature of communication and interactions that occur in that setting than other settings. Past researchers made convincing cases regarding the role of language development using SGD in several settings, but the one setting that has limited literature is SPG device use in the home (Thunberg, Ashlen, & Sandberg, 2011). More specifically, a child with definite understanding of their own feelings and desires, it is necessary to hear language used by them to understand what they most desire (DeVillers & DeVillers, 2014). We can observe behavior in expressing wants and needs, but the proper verbal expressions for that child's age range can indicate the maturity of the ToM and development of the executive functioning for their stage of life (DeVillers & DeVillers, 2014). That would lead to the second case of how the child obtains the information for a conversation. For example, when we hear someone try to get things that they want and driven by those wants, they voice and go to the place to get those wants. This approach to ToM development, therefore, focuses on the importance of learning words as labels for mental states (DeVillers & DeVillers, 2014).

What kind of language reflects or supports the developments of ToM reasoning to give researchers an understanding of the child's maturity is what several studies seeks to answer. Recent research focused on the verbs that reflect the child's mental state (DeVillers & DeVillers, 2014). Rarely do children express their own and/or another's beliefs until around four year of age. This study has been replicated with children who are slightly and moderately language delayed, but has not been studied with adults whom are non-verbal and severely delayed in language (DeVillers & DeVillers, 2014). Therefore, to fill the research gap, examining data provided by the population of non-verbal/severely delayed individuals using Voice Output Command Aides (VOCA's) in either a school, home or day program setting will hopefully answer the researcher's pressing research question.

### Speaker Biography

Tamara McGill-Carter's expertise is in Neuro-anatomy and Neuroscience with a focus on the intricate workings of the Limbic and Memory systems. Her master's thesis surrounds Human Memory and Encoding, detailing the fundamental changes that creates as well as destroy memories. She also excels in psychological theories and is currently in her final year of the Chicago School of Professional Psychology's Educational Psychology and Technology doctorate program, due to graduate by next summer. Her dissertation's focus centers on Autism, Theory of Mind, and Executive Functioning. Her expertise in neuro-anatomy further expanded while working with individuals with developmental disabilities/delays at several Home Health Agencies, which created several projects centering on how autism and developmental delays affect the brain. She currently holds dual bachelor's degrees in Psychology from Indiana University Northwest in Gary and a Master of Arts degree from the Chicago School of Professional Psychology, the concentration focus being Trauma and Crisis Intervention.

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## Expectation of physiotherapy intervention to a child with brain tumor, cerebral palsy and blindness

**Aikaterini Ziaka**

Physio4you, Greece

**B**rain tumor in childhood is very hard to be dealt with. The whole situation demands great deal of patience and perseverance from parents to treating doctors. It also depends on the type of tumor and the condition of the child itself. Relapses are also very common and can be fatal for a patient's life. In the present case study we examine the course of a 4 years old child, named Irene, who was diagnosed with brain tumor at the age of 8 months. The tumor is near the optic chiasm, which caused blindness. Irene learned to walk at the age of 18 months after physiotherapy sessions but at that point she relapsed. She had an hemorrhagic stroke which caused her right spastic hemiplegia and as a result she lost the ability to walk. She had an operation and after that chemotherapy treatment.

Since the beginning in order to make Irene stand on her feet again, we had a very close cooperation with her parents and her doctors to continue physiotherapy sessions during the chemotherapy treatment. The physiotherapy based on the NDT method and uses her hands very well in any activity

she needs. Our therapeutic procedure was aimed for her to be a child but without any risk of her life, because of her vision luck. We focused on teaching her how, what and when to do daily activities. Therefore in future she could be like any other blind child but cheerful and happy. And we succeed on that! Today she can deal with her walking perfectly and she understands the importance of physiotherapy. We are very proud of her!

### Speaker Biography

Aikaterini Ziaka has completed her bachelor degree on Physiotherapy at Alexandreio Technological Educational Institute of Thessaloniki (A.T.E.I.Th.). She completed her MSc at University of Thessaly and her research was "The differentiation of postural control by manipulating visual perception through prism adaptation". She is a pediatric therapist over 28 years period and she specialized in NDT-Bobath method. She has been at A.T.E.I.Th. as lab assistant professor in neurorehabilitation for 11 years. She completed her studies on Orthopedic Manipulative Therapy Diploma in 2016 and she is an OMT therapist since. She had many publications and she always remains informed on neurorehabilitation. She owns a physiotherapy lab, named Physio4you, since 2012. From the beginning of her career she was exclusively devoted to children and their deficits.

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 Notes:

## Cardiovascular hemodynamics assessment in children

**Samah Alasrawi**

Al Jalila Children's Hospital, UAE

**Objectives:** To know how we can assist the cardiac hemodynamics, What we measure: Intra cardiac pressures.

What we calculate: Cardiac output; Qp (pulmonary blood flow); Qs (systemic blood flow); PVR (Pulmonary vascular resistance); SVR (systemic vascular resistance); Ejection Fraction; RVSP (Right ventricle systolic pressure ); PAP (Pulmonary artery pressure); Obtaining accurate hemodynamics requires careful attention to detail; Calculation of cardiac output has many potential sources of error; Limit assumptions

as much as possible; Valuable information about disease states can be obtained with basic diagnostic catheterization and good Echo.

### Speaker Biography

Samah Alasrawi is a Paediatric Cardiologist at Al Jalila Children's from 3 years ago. After graduating from Damascus University, Syria, followed by a Master's degree in paediatric cardiology. Besides having worked in numerous private hospitals in Damascus as a Consultant Paediatric Cardiologist, She also had a private practice with clinical and research interests in congenital heart diseases, pulmonary hypertension, cardiomyopathies, and arrhythmias in children.

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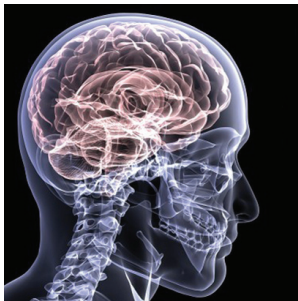
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# Accepted Abstracts

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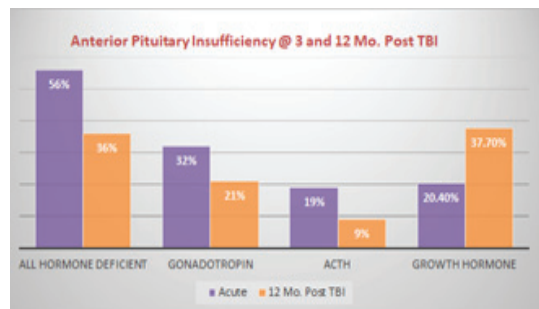
## The endocrinology of traumatic brain injury

**William Clearfield D O**

American Osteopathic Society of Rheumatic Diseases, USA

On average, 1.7 million Americans suffer a traumatic brain injury (TBI) yearly, resulting in 52,000 deaths, 275,000 hospitalizations, and 1.365 million ER visits. 71% of TBI victims consider their case as "mild," suffering no overt injuries. Within three months of the event, however, 56% of these patients experience personality changes including anxiety, depression, and other behavioral issues. In 2012, over 400,000 vets returned from Middle Eastern conflicts with diagnosed with Post Traumatic Stress Disorder. Traditional therapies, including anti-anxiety, antipsychotic and antidepressant agents, often utilizing multiple units of each agent, do nothing to treat the underlying cause. A French research team, in 1985, lead by EE Baulieu, demonstrated that the neurosteroids pregnenolone, allopregnanolone, progesterone, and DHEA, are produced not only in the periphery, as orthodox medicine long believed, but are also generated in the intracranially. A failure of the cerebral neurosteroid mechanism leads to erratic brain transmissions, which in turn exacerbates

mental health issues including depression, suicide, anxiety, panic attacks, phobias, and psychosis commonly witnessed in people living with post-traumatic stress disorder. In this lecture, we explore the role the neurosteroid hormones play in the face of traumatic brain injury, the consequences of their failure, the diagnosis of hormonal deficiencies and insufficiencies and treatment strategies to return the victim to a healthy pre-morbid hormonal state.



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 Notes:

## Neurovascular Coupling: A unifying theory for Post-Concussion Syndrome treatment and functional Neuroimaging


Mark Allen and Alina Fong

Cognitive FX, USA

Post-concussion syndrome (PCS) occurs in a significant percentage of concussion patients and is defined as having a history of traumatic brain injury with persistence of three or more symptoms. Standard structural clinical neuroimaging studies show no abnormal findings for the majority of PCS patients as opposed to functional MRI, which often reveals irregularities in the blood-oxygen level dependent (BOLD) signal. This suggests that dysregulation of neurovascular coupling (NVC), which causes abnormal BOLD signals, plays a significant role in PCS pathology. Compared to the pathophysiological mechanisms occurring in acute concussion, the underlying neuropathophysiology of chronic concussive sequelae or PCS is less understood, though becoming clearer with emerging research. We present a treatment approach grounded in the physiological theory presented here called Enhanced Performance in Cognition

(EPIC), which has shown strong clinical success. Dysregulation of neurovascular coupling (NVC), along with disruptions in cerebrovascular reactivity (CVR) and autonomic nervous system (ANS) dysregulation are the targets of EPIC treatment. Success of the approach tentatively supports the hypothesis that these features figure prominently in the neuropathophysiology of PCS. The aim is to provide a theory of the underlying mechanisms of PCS pathology and its treatment that is in accord with the current corpus of research and explains the recent therapeutic success seen in PCS patient using the EPIC treatment. We propose a theory by which NVC dysregulation is normalized through focused, intense and repetitive neurocognitive challenges during post-exercise cognitive boost and the avoidance of intracerebral steal in the setting of restored and re-regulated CVR and ANS.

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 Notes:

## Ketogenic diet therapies for Neurological disorders

**Beth A Zupec-Kania**

Consultant to the Charlie Foundation, USA

In 400BC, Hippocrates wrote that he cured a man who had seizures through fasting. In an attempt to simulate fasting, the classic Ketogenic Diet (KD) was designed in 1921 at the Mayo Clinic. Although effective at controlling seizures, its restrictive nature limited widespread use. The discovery of several anti-seizure medications over many decades resulted in near extinction of the diet until 1994 when the parents of Charlie Abrahams started a foundation to advocate for the KD that completely arrested his seizures. Multiple randomized controlled trials and prospective studies have confirmed the response rate of approximately 50% in children and adults with medication-resistant epilepsy. A 2018 consensus guideline, "Optimal clinical management of children receiving dietary therapies for epilepsy", published in *Epilepsy Open*, advised that the KD be offered to patients after the failure of two anti-seizure medications. All KDs are high in fat, moderate in protein, and restricted in carbohydrate and are referred to as "ketogenic diet therapies" (KDTs) to highlight medical

management. Variations of the classic KD have been designed in recent years to make the diet more tolerable. In the absence of carbohydrate intake, mitochondrial beta-oxidation of fat in the liver generates ketone bodies which can be readily used as an energy source. Through a series of complex mechanisms, the diet has been found to have a powerful anti-inflammatory effect. Animal research has confirmed that mitochondrial, neuronal, and mammalian target of rapamycin (mTOR) pathways are positively affected, which may account for the anti-epileptic effect and improvement in brain function. New applications for KDTs have emerged in recent years including benefits in autism, diabetes, migraine headache, Parkinson's disease, early-onset Alzheimer's disease, Prader Willi syndrome, and traumatic brain injury. Use of KDTs for glioblastoma brain cancer has shown benefit in inhibiting cancer growth and improving tumour response to traditional cancer therapies.

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## Neuroprotective and Restorative roles of a small peptide derived from Neuronal cell cycle like kinase (Cdk5) activator protein (p35)

**Harish C Pant**

National Institutes of Health, USA

Cdk5 is a member of cyclin-dependent kinases. It is unique among cell cycle kinases. It is not activated by cyclins but is regulated exclusively by the brain-specific Cdk5 activator protein of MW p35 kDa and p39 kDa. We have found that a small 24 amino acid truncated peptide derived from p35 implicated in ameliorating various neurodegenerative diseases phenotypes including AD. Cdk5 is a multifunctional protein kinase, essential for nervous system development, function and survival. The heterodimeric, (Cdk5/p35), activity is tightly regulated due to its N-terminus myristoylated head domain anchoring to the membrane, localized to plasma membrane and membranous structures. Now emerging evidence suggest that upon neuronal insults, calcium entry activates calpain produces cleaved p25 kDa protein, which has higher affinity for Cdk5 induces its deregulation and hyperactivation of Cdk5 (Cdk5/p25). Hyperactivity (Cdk5/p25) induces accumulation of hyperphosphorylated cytoskeletal proteins including tau and neurofilament. The aggregation of these neuronal proteins in neuronal cell bodies are highly toxic and are the early stages of neurofibrillary tangles, plaques, Lewy bodies

inclusions. These aggregated proteins and peptides are the hallmarks of AD, PD and ALS pathologies. We have proposed Cdk5/p35 is a physiological and Cdk5/p25 is the pathological target. We have discovered p5 a truncated 24 amino acid peptide derived from p35 selectively inhibits the deregulated and hyperactive active (Cdk5/p25) kinase, produced due to neuronal insults, induces pathology but not the Cdk5/p35, essential for nervous system development, function and survival. Recently our laboratory has provided sufficient information that a modified truncated 24-amino acid peptide (TFP5), derived from the Cdk5 activator p35/p25, penetrates and crosses blood-brain barrier upon intraperitoneal injection (i.p), inhibits abnormal Cdk5 hyperactivity, and prevents, AD pathology in 5XFAD and p25Tg AD model mice. In addition, TFP5 treatment also rescues MPTP, a mitochondrial toxin induced Parkinson's disease model mice. The present talk will provide the molecular and cellular mechanisms of the selectivity of these Tp5/TFP5 peptides two forms of the kinases, Cdk5/p35 and Cdk5/p25. We propose Tp5/TFP5 can act as a therapeutic reagent for neurological diseases.

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 Notes:

## A team approach to using the synergy patient characteristic tool to inform staff assignments on an In-patient ABI Rehabilitation unit

**Denise Johnson**

Hamilton Health Sciences, Canada


**Background:** Synergy is a model of care which considers the patient's needs, the staff competencies and the environment in order to optimize the quality of care. Synergy was developed by the American Association of critical care nurses as a way of quantifying patient needs in order to optimize care. At Hamilton Health Sciences extensive work has gone in to customizing the Synergy tools so they accurately reflect the population served. A standardized patient characteristic tool was developed. This tool was then trialed on several units across the hospital. This case example illustrates how it was used in a unique way on the ABI unit to assign care based on team scores instead of individual scores.

**Method:** A lean six sigma approach was used to describe the current state of how staff assignments were done (i.e. how staff are assigned a caseload

of patients); identify gaps and opportunities and; to implement the new Synergy model to inform staff assignment. Pre and post implementation data was collected to track: staff satisfaction; time to complete assigning process; and perceived workload.

**Conclusion:** Results show dramatic improvement in time to complete staff assignments from 3 hours down to 30 minutes. Staff satisfaction was tracked in 15 domains and significant improvements were noted in 11 of those. Additionally the perceived workload improved from 40 % reporting and unsafe or unmanageable caseload pre-implementation to 21% of staff reporting an unsafe or unmanageable caseload on a given day. These results suggest significant merit in this approach to assigning care.

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 Notes:

## Development of a competency register for unregulated health care providers on an acquired brain injury in-patient rehabilitation unit

**Carmen Carmazan**

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**Context:** Unregulated Health Care Providers including rehabilitation assistants/rehabilitation therapists (RhT) work under the direction and supervision of Regulated Health care providers, such as registered nurses, registered physiotherapists, occupational therapists and speech and language pathologists. In the inpatient ABI rehabilitation unit, RhT's provide care and treatment to patients post ABI in the following domains: medical, psychological, behavioral, physical, cognitive, communication and social. In Ontario, rehabilitation assistants are not registered with a regulatory body and do not have a standard level of training and education or a mandatory education requirement.

**Objective:** This Continuous Quality Improvement (CQI) project set out to define core and clinical competencies for RhTs and describe the accountabilities to the Regulated Health Care Professional. The competency register supports staff professional development, and

identification of learning objectives, as well as a guide for new staff orientation.

**Methods:** An interdisciplinary working group was formed and developed a 2 part Competency Tool consisting a) Core competencies for all staff regardless of discipline b) Discipline specific competencies. The competency tool is based on best practices and is in alignment with the role and scope of practice of RhTs on the ABI unit. A formal process was followed to include and categorize the competency items: a) Brainstormed items for inclusion; b) Created an affinity diagram of all the brainstormed items; c) Put all the items in to competency statements; d) 2-3 reviewing cycles; e) feedback from individual disciplines; f) edits and approval.

**Conclusion:** A formal multi-use competency document was created with staff input for RhT's in an ABI setting.

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# Health Care and Neuroscience

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## A Call to Psychologists: Addressing mental health needs using the digital technology of mental health applications

**AM Pidgeon**

Bond University, Australia

For over a decade, the psychological treatment of mental health issues has been undergoing a fundamental change. This change has been largely driven by the continued significant unmet need for mental health services and the availability of digital technology such as the internet and mobile devices. Individuals around the world are becoming increasingly dependent on the internet to obtain information and interact with services, due to flexibility, convenience, choice, cost and time savings. This dependence is becoming more evident as individuals seeking mental health information and support report preferring to access services online rather than face-to-face services. The field of mobile mental health (“m-Health”) is evolving rapidly with an unprecedented growth of psychological tools on the market including preventive and therapeutic interventions. M-Health applications offer the opportunity for mental healthcare delivery anytime and anywhere overcoming geographical, time based organizational barriers with low and affordable costs. M-Health applications can be used as a bridge between face-to-face therapy sessions, improve adherence to out of therapy activities while promoting patient autonomy. Given

the ever increasing demands and limited supply of mental health services, coupled with barriers to care including a patient’s desire for anonymity, indirect financial costs and impaired access to mental health services, the use of apps could promote mental health service efficiency as well as supporting the mental health system to achieve the promise of providing equal access for equal need. The challenge that psychology faces with the rapid increase of m-health applications is the availability of low-quality applications with a lack of an underlying evidence base, a lack of scientific credibility and limited clinical effectiveness. M-health application designers are rarely psychologists and if they were, there would be better accuracy of the content with evidence to support the efficacy of the application. The barriers for psychologists designing m-health applications are typically a lack of technical skills and time. This presentation will discuss the growing need for psychologists to shift their philosophy-from seeing what happens-to a prioritisation of designing and evaluating m-health applications in the provision of high quality clinical services to patients.

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 Notes:

## Self management with compression in lymphoedema

**Franz-Josef Schingale**

Lympho-Opt clinic, Germany

**I**deal goal of therapy is to normalize the lymphatic transport. Because of the chronic nature of lymphedema the therapeutic goal is to return the disease in the latent stage (limited transport capacity without lymphedema) or at least in the stage I and thereby achieve sustainable relief from the discomfort. In treatment planning one or more of the following sub-objectives have to be specified:

- Improve lymphatic drainage
- Softening fibrosclerotic tissue changes
- Reduction of connective tissue
- Improving the function deficits of the limbs, to enhance the effectiveness of muscle and joint pump
- Mediation of self-treatment options (skin care, certain lymph drainage handles, technique of lymphatic compression bandage)

- Repatriation or reintegration of such persons in their social environment such as school, training, study or professional
- Prevention of long-term care
- Improving quality of life

The most important column of the treatment is compression therapy and movement. We educated the patients in bandaging but it's problematic, because bandage slips after 5 hours and it was a disaster for the patient to take off the whole bandage and start again. So we changed to JuxtaFit for self management, a stiff bandage with velcroft closures and a BPS Guide

**Advantages for the patient:** It takes less time and the patient can adjust it after a few hours to control the necessary compression, better reduction due to higher stiffness and controlled pressure

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 Notes:

## **Autologous fat grafting to the post mastectomy irradiated chest wall: A new way for minimal invasive breast reconstruction - A series of 54 patients**

**K Razzouk**

Institut du Sein Nice Santa Maria, France

**Introduction:** Breast reconstruction after total mastectomy and irradiation is a real challenge for the surgical teams. And is a crucial step for the patient in the life after breast cancer. The effect of radiotherapy on the skin often leads to preferring the reconstructions by flaps. However, reconstructions by prosthesis carries a high risk of complications and unsatisfactory cosmetic results. The optimization of skin trophicity by lipofilling and its positive impact on the results of secondary prosthetic breast reconstruction led us to perform an autologous fat grafting prior to secondary implant breast reconstruction after mastectomy and radiotherapy.

**Patients and method:** All patients were treated at the same center between 2012 and 2015. They all had a total mastectomy and irradiation. They all had one or more sessions of lipofilling prior to breast implant reconstruction. Patients were followed to collect this data: postoperative complications, prosthesis removal, cosmetic result, and tumor recurrences.

**Results:** Fifty-four patients were included. The mean pre-pectoral lipofilling session was 1.1 (1-2). The average volume of fat injected is 150cc (80-250). The average time between the end of treatment and the first session of lipofilling is 20.4 months (3-60). The mean volume of the prosthesis is 400cc (290-620). The mean follow-up time is 22 months. No local tumor recurrence was reported. One patient had a cutaneous necrosis after lipofilling. Implant explantation was performed in three cases (5.5%). The mean cosmetic result is 4.7 (3.5-5).

**Conclusion:** Pre-pectoral lipofilling prior to implant breast reconstruction improves the chances of success by optimizing the trophicity of the skin. It significantly reduces the risk of prosthesis explantation.

Therefore, this protocol allows us to propose a minimal invasive breast reconstruction, with no additional scar and no additional pain.

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## Electronic water can reduce oxidative stress in cancer and diabetes patients for 3 weeks drinking

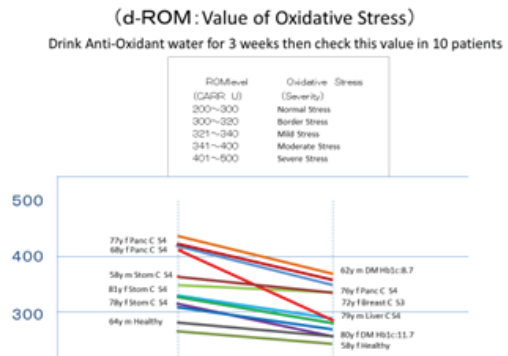
Masahiro Onuma

President of Trisguide, Japan


Oxidative stress means a state there is imbalance between the oxidizing action and the reducing action due to reactive oxygen species (ROS) in a living body, resulting in the oxidizing action becoming dominant. Oxidative stress arises as the balance between production and removal is disrupted through excessive production of ROS and impairment of the antioxidant system. Oxidative stress has been reported to be involved in the onset and progress of various diseases. Characteristics of Type 2 diabetes are insulin secretion failure and insulin resistance, but it seems that oxidative stress is greatly involved in insulin secretion failure. In the insulin secretion-inducing  $\beta$  cells of Langerhans islets in the pancreas, the amount of superoxide dismutase (SOD), which is representative of the ROS elimination system, is small and resistance to oxidative stress is considered to be weak. Regarding cancer, it is well known that chronic inflammatory conditions increase the risk of carcinogenesis. Cells such as neutrophils and macrophages are activated in the inflammation area leading to increase in production of active oxygen and nitric oxide. These free radicals cause DNA mutation and cell proliferation thereby promoting cancer development. When chronic inflammation is present, cancer develops more easily.

Electronic water, which was developed to generate electron in water, was consumed for three weeks, after meals, between meals and before sleeping 6 times a day, and according to the test subjects' possible time periods. The amount of drinking water was 750-1000 mL, and BAP and d-ROMs checks for all cases were carried out at 4:30 pm. The results of cancer patients and diabetes patients were seen as attached.

As a result, the d-ROMs value in the degree of oxidative stress has reduced, and the BAP value, which is an indicator of plasma antioxidant capacity, has improved significantly.



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 Notes:

## Fluctuations of resting state networks reflect variations in Cognitive states

**Laurens Van Calster**

University of Geneva, Switzerland

**N**euroimaging studies have revealed the recruitment of a range of neural networks during the resting state, which might reflect a variety of cognitive experiences and processes occurring in an individual's mind. I will present how the default mode network (DMN) and attentional networks are associated with distinct mental states when participants are not performing an explicit task. To investigate the range of possible

cognitive experiences more directly, I will present a novel method of resting-state fMRI experience sampling, informed by a phenomenological investigation of the fluctuation of mental states during the resting state. These findings contribute to our understanding of resting state networks and may be important to consider for research on resting state biomarkers.

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## Role of alternative medicine systems in achieving universal health coverage in India

**Sandeep A Chavan**

Tata Trusts, India

**A**lternative systems functional in India are Ayurveda, Yoga, Unani, Siddha and Homoeopathy, collectively referred as AYUSH systems. With total 3,601 AYUSH hospitals in the country, total AYUSH dispensaries are 25,492. There are 513 undergraduate and 145 postgraduate colleges. The country has total 7.37 Lakh AYUSH practitioners. There is a huge potential to utilize this workforce to meet public healthcare needs of vast population. Although mainstreaming AYUSH in public health system has been a national agenda, it yet to get translated on ground in its true essence. Government has made provision of co-locating AYUSH doctors at block and district level public health facilities which has helped to ensure better coverage of the population. However, mainstreaming will further need making

AYUSH services available at grassroot level facilities to make them more accessible for masses. AYUSH systems need to be integrated in national health program wherever possible. Standardization of treatment protocols, quality of education and research needs to be promoted further. With poor allopathic doctor: population ratio (1: 11,082 people), it is essential that AYUSH workforce is streamlined to mitigate unmet needs of healthcare, especially in rural and tribal counterparts of the country. These indigenous medicine systems are cost effective and offer holistic approach being patient centric and patient friendly. Additional government patronage is needed to promote these systems further.

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