

and localized inflammation, compromised endothelial barriers, IgG sensitivities to food antigens, exposure to viral and parasitic pathogens, and autoimmunity. The gut in a homeostatic state equates with a functional digestive system, cellular barrier stability and properly regulated recognition of self and non-self antigens, as managed by a complex community of resident microbes. Our studies address how environmental and genetic factors relate to GI dysfunction, impact the resident gut microbiota and result in dysregulation of processes in the host central nervous system. We hypothesize that disturbance to GI equilibria activates peripheral immune factors including complement pathway components that function in synaptic pruning. We evaluate these issues with peripheral immune biomarkers and deep sequencing in a number of case-control psychiatric cohorts that include antipsychotic-naïve individuals. Although certain medications and lifestyle factors might affect GI functioning, our findings support a GI pathology inherent to the schizophrenia disease process and a role for the gut-brain axis in complex brain disorders. The identification of those individuals affected by GI-related risk factors will enable appropriate and individualized treatments to be designed and tested for efficacy of both gut and brain-related symptoms.

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### The role of the gut microbiota in mood and behaviour. Whether psychobiotics can become an alternative in therapy in psychiatry?

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**Introduction** Novel research concepts based on therapies aiming to modulate intestinal microbiota are emerging. The evidence is mounting that gut-brain axis plays an important role in the development of mood and depressive disorders [1]. The similarities between blood brain barrier (BBB) and gut vascular barrier (GVB) and their role in chronic diseases have been recently unraveled [2]. Especially convincing data come from animal models, where administration of probiotics and antibiotics in germ and pathogen free mice showed beneficial role in the regulation of behavior, cognition, pain, anxiety and mood.

**Aims and results** Based on available data as well as on studies looking at the effect of multispecies probiotics (Ecologic® Barrier containing *B.bifidum*W23, *B.lactis*W52, *L.acidophilus*W37, *L.brevis*W63, *L.casei*W56, *L.salivarius*W24, *L.lactis*W19, *L.lactis*W58) on cognitive reactivity to sad mood in healthy volunteers [3] we designed the human trial aiming to compare microbiome alterations and response to therapy in patients with depression and schizophrenia. Moreover, in vitro and in vivo data support the notion that multispecies probiotics are capable of improving gut barrier function [4] and may alleviate disorders affecting mood and depressive-like behavior. We postulate that therapies modulating the microbiome-gut-brain axis warrant further investigations.

**Conclusion** Multispecies probiotics have the potential to influence the gut-brain axis and alleviate mental disorders. Ongoing clinical study in patients with depression and schizophrenia will help to further unravel the role of gut-brain axis in the treatment of patients with psychiatric disturbances.

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### E-mental Health: Updates on recent achievements and pitfalls

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#### E-Mental Health and models of care: The evidence base and feasibility of picking one vs. another?

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The patient-centered care features quality, affordable, and timely care in a variety of settings – technology is a key part of that – particularly among younger generations and child and adolescent patients. The consumer movement related to new technologies is nearly passing clinicians by, as new ways of communicating with others (text, email, Twitter, Facebook) revolutionizes how we experience life and access healthcare. This paper explores a continuum with healthy, innovative behavior on one end (e.g., social media) and pathological Internet use on the other end—and the range of self-help and e-mental healthcare options being used. Specifically, it focuses on how social media adds to, yet may complicate healthcare delivery, such that clinicians may need to adjust our approach to maintain therapeutic relationships, interpersonal/clinical boundaries, and privacy/confidentiality. We suggest planning ahead to discuss expectations about online communication between doctors and patients as part of the informed consent process, offer other do's and don'ts for patients and clinicians, and review applicable guidelines. More research is needed on consumer and patient use of technology related to healthcare, as is an approach to basic and advanced measurement of outcomes.

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#### After all, is E-Mental Health capable of making a paradigm shift?

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Only a very small percentage of adolescents and young adults with mental challenges is able to access specialized care. Access is