

## Ageing and Aged Care publication list June 2020

(MACH Care of the Ageing Subcommittee members' **bolded**)

**1. Hemoglobin Levels are Low in Sarcopenic and Osteosarcopenic Older Persons.** *Calcified Tissue International* 2020. Published online June 2020.

Bani Hassan E., Vogrin S., Hernandez Viña I., Boersma D., Suriyaarachchi P., **Duque G.**

**About the Research:** Anemia is commonly associated with osteoporosis and sarcopenia in older persons. However, there is a common subset of patients identified as osteosarcopenic at a higher risk of adverse outcomes. Whether these patients are also at a higher risk of anemia remains unknown. In this study, we aimed to compare hemoglobin (Hb) levels in osteosarcopenic older subjects versus those with sarcopenia, osteopenia/osteoporosis alone and controls.

[Link to publication](#)

**2. Factors associated with discharge destination in community-dwelling adults admitted to acute general medical units.** *Journal of Geriatric Physical Therapy* 2020. Published Online June 2020.

D'Souza AN, Granger CL, Patrick CJ, Kay JE, **Said CM.**

About the Research: General medical patients often present to the hospital with medical, social, cognitive, and functional issues that may impact discharge destination. The aim of this study was to investigate the association between patient factors at hospital admission and discharge destination in general medical patients.

[Link to publication](#)

**3. An integrated knowledge translation approach to co-design a complex exercise intervention for stroke survivors: A case report.**

Ramage ER, Burke M, Galloway M, Janssen H, Lynch EA, Marsden DL, Patterson AJ, **Said CM**, English C. In: Boland L, Reszel J, McCutcheon C, Kothari A, Graham ID, editors. *How We Work Together: The Integrated Knowledge Translation Research Network Casebook*. Volume 3. Ottawa, ON: Integrated Knowledge Translation Research Network. 2020; 13-18.

**4. Three-tissue compositional analysis reveals in-vivo microstructural heterogeneity of white matter hyperintensities following stroke.** *NeuroImage Volume 218, September 2020, Article number 116869.* Published online June 2020.

Khan W., Egorova N., Khlif M.S., Mito R., Dhollander T., **Brodtmann A.**

**About the Research:** White matter hyperintensities (WMHs) are frequently observed on brain scans of older individuals and are associated with cognitive impairment and vascular brain burden. Recent studies have shown that WMHs may only represent an extreme end of a diffuse pathological spectrum of white matter (WM) degeneration. The present study investigated the microstructural characteristics of WMHs using an advanced diffusion MRI modelling approach known as Single-Shell 3-Tissue Constrained Spherical Deconvolution (SS3T-CSD), which provides information on different tissue compartments within each voxel.

[Link to publication](#)

**5. The ubiquitin proteasome system and schizophrenia.** *The Lancet Psychiatry* Volume 7, Issue 6, June 2020, Pages 528-537.

Luza S., Opazo C.M., Bousman C.A., Pantelis C., **Bush A.I.**, Everall I.P.

**About the Research:** The ubiquitin-proteasome system is a master regulator of neural development and the maintenance of brain structure and function. It influences neurogenesis, synaptogenesis, and neurotransmission by determining the localisation, interaction, and turnover of scaffolding, presynaptic, and postsynaptic proteins. Moreover, ubiquitin-proteasome system signalling transduces epigenetic changes in neurons independently of protein degradation and, as such, dysfunction of components and substrates of this system has been linked to a broad range of brain conditions. Although links between ubiquitin-proteasome system dysfunction and neurodegenerative disorders have been known for some time, only recently have similar links emerged for neurodevelopmental disorders, such as schizophrenia. Here, we review the components of the ubiquitin-proteasome system that are reported to be dysregulated in schizophrenia, and discuss specific molecular changes to these components that might, in part, explain the complex causes of this mental disorder

[Link to publication](#)

**6. Anxiety disorders in late life—Why are we not more worried?** *International Journal of Geriatric Psychiatry* 2020. Published online June 2020.

Chong T.W.H., **Lautenschlager N.T.**, Anstey K.J., Bryant C.

[Link to publication](#)

**7. Amyloidogenic processing of Alzheimer's disease  $\beta$ -amyloid precursor protein induces cellular iron retention.** *Molecular Psychiatry* 2020. Published online June 2020.

Tsatsanis A., Wong B.X., Gunn A.P., Ayton S., **Bush A.I.**, Devos D., Duce J.A.

**About the Research:** The proteolytic cleavage of  $\beta$ -amyloid precursor protein (APP) to form the amyloid beta ( $A\beta$ ) peptide is related to the pathogenesis of Alzheimer's disease (AD) because APP mutations that influence this processing either induce familial AD or mitigate the risk of AD. Yet  $A\beta$  formation itself may not be pathogenic. APP promotes neuronal iron efflux by stabilizing the cell-surface presentation of ferroportin, the only iron export channel of cells. Mislocalization of APP can promote iron retention, thus we hypothesized that changes in endocytotic trafficking associated with altered APP processing could contribute to the neuronal iron elevation and oxidative burden that feature in AD pathology. Here, we demonstrate, using genetic and pharmacological approaches, that endocytotic amyloidogenic processing of APP impairs iron export by destabilizing ferroportin on the cell surface. Conversely, preferential non-amyloidogenic processing of APP at the cell surface promotes ferroportin stabilization to decrease intraneuronal iron. A new  $A\beta$ -independent hypothesis emerges where the amyloidogenic processing of APP, combined with age-dependent iron elevation in the tissue, increases pro-oxidant iron burden in AD.

[Link to publication](#)

**8. Refined conceptual model for implementing dementia risk reduction: Incorporating perspectives from Australian general practice.** *Australian Journal of Primary Health*. Volume 26, Issue 3, June 2020, Pages 247-255.

K.Godbee, J.Gunn, **N.Lautenschlager** & V.J. Palmer

**About the Research:** Dementia is now a global health priority. With no known cure, the best way to reduce the number of people who will be living with dementia is by promoting dementia risk reduction (DRR). However, despite evidence-based guidelines, DRR is not yet routinely promoted in Australian general practice. Previously, we proposed a preliminary conceptual model for implementing DRR in primary care based on our scoping review of practitioners' views. The present study aimed to refine this model for the Australian context by incorporating the current perspectives of Australian general practitioners (GPs) and general practice nurses (GPNs) about DRR.

[Link to publication](#)

**9. Associations of childhood adiposity with menstrual irregularity and polycystic ovary syndrome in adulthood: the Childhood Determinants of Adult Health Study and the Bogalusa Heart Study.** *Human reproduction (Oxford, England)*, Volume 35, Issue 5, 1 May 2020, Pages 1185-1198

He Y., Tian J., Blizzard L., Oddy W.H., Dwyer T., Bazzano L.A., **Hickey M.**, Harville E.W., Venn A.J.

**About the Research:** STUDY QUESTION: Is high adiposity in childhood associated with menstrual irregularity and polycystic ovary syndrome (PCOS) in later life? SUMMARY ANSWER: Overall, greater childhood BMI was associated with menstrual irregularity, and greater childhood BMI and waist/height ratio (WHtR) in white but not black participants were associated with PCOS in adulthood.

[Link to publication](#)

**10. Impact of using the updated EWGSOP2 definition in diagnosing sarcopenia: A clinical perspective.** *Archives of Gerontology and Geriatrics*, Volume 90, September - October 2020, Article number 104125. Published online June 2020.

Van Ancum J.M., Alcazar J., Meskers C.G.M., Nielsen B.R., Suetta C., **Maier A.B.**

**About the Research:** Background and Purpose: The revised European Working Group on Sarcopenia in Older People (EWGSOP2, version 2019) definition of sarcopenia differs with respect to the EWGSOP (version 2010) definition in applied criteria and their cut-off values. We aimed to investigate the impact of the new definition on sarcopenia prevalence in various populations of older adults.

[Link to publication](#)

**11. Global Coagulation Assays in Transgender Women on Oral and Transdermal Estradiol Therapy.**

*The Journal of clinical endocrinology and metabolism, Volume 105, Issue 7, 1 July 2020*

Lim H.Y., Leemaqz S.Y., Torkamani N., Grossmann M., **Zajac J.D.**, Nandurkar H., Ho P., Cheung A.S.

**About the Research:** CONTEXT: The thrombotic effects of estradiol therapy in transgender women are unclear. Global coagulation assays (GCA) may be better measures of hemostatic function compared with standard coagulation tests. OBJECTIVE: To assess the GCA profiles of transgender women in comparison to cisgender controls and to compare how GCA differ between routes of estradiol therapy in transgender women.

[Link to publication](#)

**12. Instrumented measures of sedentary behaviour and physical activity are associated with mortality in community-dwelling older adults: A systematic review, meta-analysis and meta-regression analysis.** *Ageing Research Reviews, 2020, Article number 101061. Published online June 2020.*

Roger A.G.M., Ramsey K.A., Trappenburg M.C., van Rijssen N.M., Otten R.H.J., Heymans M.W., Pijnappels M., Meskers C.G.M., **Maier A.B.**

**About the Research:** Sedentary behaviour (SB) and physical activity (PA) can be objectively assessed with inertial sensors to describe bodily movement. Higher SB and lower PA is associated with higher chronological age and negative health outcomes. This study aimed to quantify the association between instrumented measures of SB (i-SB) and PA (i-PA) and mortality in community-dwelling older adults, to subsequently compare the quantitative effect sizes and to determine the dose-response relationships.

[Link to publication](#)

**13. Alzheimer risk factors age and female sex induce cortical A $\beta$  aggregation by raising extracellular zinc.** *Molecular Psychiatry, 2020. Published online June 2020.*

Datki Z., Galik-Olah Z., Janosi-Mozes E., Szegedi V., Kalman J., Hunya Á.G., Fulop L., Tamano H., Takeda A., Adlard P.A., **Bush A.I.**

**About the Research:** Aging and female sex are the major risk factors for Alzheimer's disease and its associated brain amyloid- $\beta$  (A $\beta$ ) neuropathology, but the mechanisms mediating these risk factors remain uncertain. Evidence indicates that A $\beta$  aggregation by Zn<sup>2+</sup> released from glutamatergic neurons contributes to amyloid neuropathology, so we tested whether aging and sex adversely influences this neurophysiology.

[Link to publication](#)

**14. A clinical guide to the pathophysiology, diagnosis and treatment of osteosarcopenia.**

*Maturitas, Volume 140, October 2020, Pages 27-33. Published online June 2020.*

Kirk B., Miller S., Zanker J., **Duque G.**

**About the Research:** Advances in medicine have paved the way for older persons to live longer, but with more years spent living with disability and dependency. Many older persons are living with comorbidities such as osteoporosis (loss of bone mass) and sarcopenia (loss of muscle mass and function), two diseases that, when concurrent, form osteosarcopenia, a newly identified musculoskeletal syndrome. Osteosarcopenia impedes mobility and diminishes independence and thus quality of life.

[Link to publication](#)

**15. Adrenergic  $\beta$  receptor activation reduces amyloid  $\beta$ 1-42-mediated intracellular  $Zn^{2+}$  toxicity in dentate granule cells followed by rescuing impairment of dentate gyrus LTP.**

*NeuroToxicology, Volume 79, July 2020, Pages 177-183. Published online June 2020.*

Tamano H., Ishikawa Y., Shioya A., Itoh R., Oneta N., Shimaya R., Egawa M., Adlard P.A., **Bush A.I.**, Takeda A.

**About the Research:** Adrenergic  $\beta$  receptor activation prevents human soluble amyloid  $\beta$  ( $A\beta$ )-induced impairment of long-term potentiation (LTP) in slices. On the basis of the evidence that human  $A\beta$ 1-42-induced impairment of LTP is due to  $A\beta$ 1-42-mediated  $Zn^{2+}$  toxicity, we postulated that adrenergic  $\beta$  receptor activation reduces  $A\beta$ 1-42-mediated intracellular  $Zn^{2+}$  toxicity followed by rescuing  $A\beta$ 1-42 toxicity. To test the effect of adrenergic  $\beta$  receptor activation, LTP was recorded at perforant pathway-dentate granule cell synapses of anesthetized rats 60 min after  $A\beta$ 1-42 injection into the dentate granule cell layer.

[Link to publication](#)

**16. Muscle, Bone, and Fat Crosstalk: the Biological Role of Myokines, Osteokines, and Adipokines.**

*Current Osteoporosis Reports, 2020. Published online June 2020*

Kirk B., Feehan J., Lombardi G., **Duque G.**

**About the Research:** Purpose of Review: Skeletal muscle and bone are connected anatomically and physiologically, and play a crucial role in human locomotion and metabolism. Historically, the coupling between muscle and bone has been viewed in light of mechanotransduction, which dictates that the mechanical forces applied to muscle are transmitted to the skeleton to initiate bone formation. However, these organs also communicate through the endocrine system, orchestrated by a family of cytokines namely myokines (derived from myocytes) and osteokines (derived from bone cells). A third player in this biochemical crosstalk is adipose tissue and the secretion of adipokines (derived from adipocytes). In this review, we discuss the bidirectional effects of myokines and osteokines on muscle and bone metabolism, and the impact of adipokines on both of these secretory organs.

[Link to publication](#)

**17. Relationships between body mass index with oral estradiol dose and serum estradiol concentration in transgender adults undergoing feminising hormone therapy.** *Therapeutic Advances in Endocrinology and Metabolism*, Volume 11, 2020. Published online June 2020.

Nolan B.J., Brownhill A., Bretherton I., Wong P., Fox S., Locke P., Russell N., Grossmann M., **Zajac J.D.**, Cheung A.S.

**About the Research:** Aim: Feminising hormone therapy with estradiol is used to align an individual's physical characteristics with their gender identity. Given considerable variations in doses of estradiol therapy administered as gender-affirming hormone therapy (GAHT), we aimed to assess if body mass index (BMI) correlated with estradiol dose/concentration and assess the correlation between estradiol dose and estradiol concentrations.

[Link to publication](#)

**18. Iron chelation by deferiprone does not rescue the Niemann-Pick Disease Type C1 mouse model.** *BioMetals*, Volume 33, Issue 2-3, 1 June 2020, Pages 87-95. Published online June 2020.

Hung Y.H., Lotan A., Yeshurun S., Schroeder A., **Bush A.I.**

**About the Research:** Niemann-Pick Disease Type C (NP-C) is a fatal lysosomal storage disorder with progressive neurodegeneration. In addition to the characteristic cholesterol and lipid overload phenotype, we previously found that altered metal homeostasis is also a pathological feature. Increased brain iron in the *Npc1*<sup>-/-</sup> mouse model of NP-C may potentially contribute to neurodegeneration, similar to neurodegenerative diseases such as Alzheimer's and Parkinson's diseases. Deferiprone (DFP) is a brain penetrating iron chelator that has demonstrated effectiveness in preventing neurological deterioration in Parkinson's disease clinical trials. Therefore, we hypothesized that DFP treatment, targeting brain iron overload, may have therapeutic benefits for NP-C.

[Link to publication](#)

**19. 'There for me': A qualitative study of family communication and decision-making in end-of-life care for older people.** *Progress in Palliative Care*, 2020. Published online June 2020.

Gerber K., Lemmon C., Williams S., Watt J., Panayiotou A., **Batchelor F.**, **Hayes B.**, Brijnath B.

**About the Research:** Background: Communication is an essential prerequisite for good end-of-life care. Yet, there is a need to better understand the unique features of communication regarding end-of-life care for older people. Aim: To gain an in-depth understanding of family communication and decision-making concerning older people's end-of-life care.

[Link to publication](#)

**20. The association of basic and challenging motor capacity with mobility performance and falls in young seniors.** *Archives of Gerontology and Geriatrics, Volume 90, September - October 2020, Article number 104134. Published online June 2020.*

Gordt K., Paraschiv-Ionescu A., Mikolaizak A.S., Taraldsen K., Mellone S., Bergquist R., Van Ancum J.M., Nerz C., Pijnappels M., **Maier A.B.**, Helbostad J.L., Vereijken B., Becker C., Aminian K., Schwenk M.

**About the Research:** Background: Understanding the association between motor capacity (MC) (what people can do in a standardized environment), mobility performance (MP) (what people actually do in real-life) and falls is important for early detection of and counteracting on functional decline, particularly in the rapidly growing population of young seniors. Therefore, this study aims to 1) explore the association between MC and MP, and between MC and falls, and 2) investigate whether challenging MC measures are better associated with MP and falls than basic MC measures.

[Link to publication](#)