# GRAND ROUNDS

## GR.1

### Cost-effectiveness of multidisciplinary palliative care interventions in advanced Parkinsonism Syndromes

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doi: 10.1017/cjn.2025.10141

Background: Advanced parkinsonian syndromes represent a growing challenge for healthcare systems as their care needs are complex and costly. Current care models often lack integration of specialized neurology and palliative care, leading to suboptimal outcomes. The Advanced Care Team for Parkinson's program (ACT-PD) addresses this gap by enhancing care quality and reducing costs. This study evaluates the cost-effectiveness of ACT-PD interventions compared to standard care (SC). Methods: A retrospective analysis compared 27 deceased ACT-PD patients (2022–2024) with 1,439 deceased SC patients (2011–2017). It assessed healthcare utilization, place of death, and patient Quality-Adjusted Life Years (QALYs). Healthcare utilization measures included hospitalizations, Intensive Care Unit (ICU) admissions, emergency department (ED) visits, and palliative care consultations. The analysis incorporated the incremental cost-effectiveness ratio (ICER) using Calgary Zone cost data from 2021–2022. Results: ACT-PD patients experienced fewer hospital deaths (33.33% vs. 45.90%) and more deaths at home (22.22% vs. 7.90%). They also had greater neurology (48.00% vs. 37.20%) and palliative care engagement (36.00% vs. 17.40%). ACT-PD avoided ICU admissions, saving $2.56 million annually, with total cost savings of $2.66 million. The ICER was $1,459 per QALY gained. Conclusions: Multidisciplinary palliative care interventions provided by ACT-PD are highly cost-effective, improving care quality while reducing healthcare costs.

## GR.2

### Circulating plasma cytokines as biomarkers of inflammatory activity in radiologically isolated syndrome and Multiple Sclerosis

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doi: 10.1017/cjn.2025.10142

Background: In multiple sclerosis (MS), soluble mediators of neuroinflammation are released by activated lymphocytes and resident immune cells, leading to demyelination and neurodegeneration. Radiologically isolated syndrome (RIS) is an entity in which white matter lesions fulfilling criteria for MS occur in individuals without any suggestive symptoms. The exact nature of pro- and anti-inflammatory cytokines in blood, and their association with disease activity in RIS/MS requires further clarification. Methods: Plasma was collected and cryopreserved from healthy controls (HCs), people with RIS and relapsing-remitting MS (RRMS) at the Barlo MS Centre. All samples were analyzed with OLink Target 96 Inflammation Multiplex Immunoassay Panel. Results: Individuals with RIS ($p=0.0001$; $p= 0.0007$; $p= 0.0012$) and RRMS ($p<0.0001$; $p= 0.0003$; $p= 0.00112$) had significantly higher concentrations of hepatocyte growth factor (HGF), interleukin-6 (IL-6), and chemokine ligand 23 (CCL23) in plasma compared to HCs, and patients with RRMS ($p=0.0087$) had significantly higher concentrations of HGF compared to individuals with RIS. Conclusions: Our study demonstrates that HGF, IL-6 and CCL23 are significantly increased in the plasma of patients with RIS and RRMS compared to HCs. Our observations suggest that the biology of MS is present in those with RIS, and these neuroinflammatory mediators may serve as a biomarker of disease activity.

## GR.3

### Mortality in tuberous sclerosis complex: current understandings

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doi: 10.1017/cjn.2025.10143

Background: Tuberous Sclerosis Complex (TSC) is a multisystemic neurocutaneous disorder in which hamartomas confer significant medical risks, including mortality, by disruption of local tissues. However, only recently have multiple studies assessed specific aetiologies of mortality in TSC. Methods: A literature review of all available studies examining mortality in TSC was conducted until December 15, 2024. Results: We identified 13 studies reporting 411 deaths from 6735 individuals with TSC. Crude mortality per 100 individuals ranged from 1.4-13.8 over average intervals of 11-45 years. Mortality risk ranged from 3.0-4.9 (mean 4.3) versus the general population. Mean life expectancy was 66.2 years compared to 81.8 in the general population. In seven studies that reported specific aetiologies of mortality, 6/7 (85%) had renal (commonly renal failure or angiomyolipoma hemorrhage) or brain disease (most frequently sudden unexpected death in epilepsy or brain tumours) as the most common cause of mortality. Intellectual delay conferred increased mortality risk. Lymphangioleiomyomatosis conferred significant risk of mortality in adult women and cardiac rhabdomyomas were the dominant cause of neonatal mortality. Conclusions: Mortality in TSC is elevated compared to the general population, with brain and renal disease most frequently culpable. Future studies should assess the impact of disease modifying therapies on mortality in TSC.



https://doi.org/10.1017/cjn.2025.10143 Published online by Cambridge University Press