measures. At each time-point MEDD, DEDD and ACL were calculated. Multilevel modelling was used to investigate independent associations between MEDD, DEDD and ACL, and cognitive and gastrointestinal symptoms, quality of life, performance status and survival.
Results Cognitive and gastrointestinal symptoms, performance status, and quality of life worsened over time. In the adjusted multilevel analysis significance remained for worsening performance status (MEDD, p=0.001; DEDD, p<0.001; ACL p=0.035) and shorter time to death (MEDD, p<0.001; ACL, p<0.01).
Conclusion Commonly used palliative medications were associated with deteriorating performance status and shorter time to death. This analysis highlights the importance of adjusting for other variables, including other medication when exploring medication-related harms. An understanding of the risk-benefit balance of medications is needed to maximise net benefit for patients. Future work to delineate interactions between classes of drugs and drug-related harms and to evaluate early assessment and management of side-effects is needed in order to maximise net benefit.

O-4 USE OF ACTIGRAPHY FOR PROGNOSTICATION IN CANCER PATIENTS

Andrew Davies.

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O-5 A SYSTEMATICALLY STRUCTURED REVIEW ON BIOMARKERS OF DYING IN CANCER PATIENTS AT THE END OF LIFE; AN EXPLORATION OF POTENTIAL MECHANISMS FOR THE BIOLOGY OF DYING

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Background The Neuberger review made a number recommendation to improve end of life care, including research into the biology of dying. An important aspect of the biology of dying is the identification of biomarkers of the dying process. Biomarkers have the potential to assist clinicians in recognising dying, in particular how to distinguish dying from reversible acute deterioration.
Objectives To critically appraise the existing literature on prognostic biological factors that impact survival in advanced cancer patients in the last days, weeks or months of life; to identify prognostic models for advanced cancer patients, which could assist clinicians to prognosticate in the last days, weeks or months of life; and to identify candidate biomarkers of the dying process that can be measured serially in bodily fluids.
Methods A systematically structured review was conducted using three electronic databases. A hand search of six peer-reviewed journals and conference abstracts was also conducted. Studies reporting biomarkers of dying in cancer patients with a median survival of ≤90 days, and post-mortem studies were included.
Results 30 articles were included. There is grade A evidence for the following biological factors: serum CRP, WBC count, lymphopaenia, serum sodium, urea, ALP and hypoalbuminaemia. An additional nine prognostic factors were identified with grade B evidence including: thrombocytopaenia, elevated vitamin B12, hyperbilirubinaemia, hypocholesterolaemia, elevated AST, ALT, LDH and INR. In the last two weeks of life, a number of biomarkers have been identified but limitations exist. No post-mortem studies met the inclusion criteria.
Conclusion The biology of dying is an important area for future research interest. The evidence base to date is largely focused on symptoms, signs and prognostic factors. We identify a number common themes shared amongst advanced cancer patients, candidate biomarkers of dying, and areas for future research including non-invasive research methodologies.

O-6 A CLUSTER RANDOMISED TRIAL OF CLINICALLY ASSISTED HYDRATION AT THE END OF LIFE

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Background Clinically-assisted hydration (CAH) at the end-of-life is one of the most contentious issues in medicine, partly due to the fact that there is no good data to support/refute its use in this scenario.
Methods The study was a cluster randomised trial (feasibility study) comparing CAH with oral care in patients with advanced cancer receiving end-of-life care under palliative care teams in 12 hospices/hospitals in the UK. The main outcomes related to the feasibility of conducting a definitive study, whilst the clinical outcomes included the prevalence of end-of-life care symptoms (particularly hyperactive delirium), adverse effects, and overall survival.
Results 200 patients were recruited in 1 year, and all feasibility criteria were achieved. The prevalence of delirium was similar in the two groups, although the onset of delirium was delayed in the CAH group (112 hour versus 58 hour). Similar results were seen for excess respiratory secretions ("death rattle"). Median survival was greater in the CAH group (i.e. 5 days versus 3 days). Thirty-eight percent patients discontinued CAH due to perceived adverse effects (e.g. localised swelling, respiratory secretions).
Conclusion Interventional trials are possible in patients at the end-of-life, but the methodology needs to be somewhat adapted. The results of the feasibility study suggest that CAH may have a positive influence of end-of-life problems, and possibly survival. However, a larger/definitive study is required to confirm these findings. CAH is associated with adverse effects in some patients, but these may be less than perceived by palliative care specialists.

O-7 ROBOTIC TECHNOLOGY AND PALLIATIVE CARE EDUCATION: THE DEVELOPMENT OF A 'NAO ROBOT' COMPUTER PROGRAM

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