H3K4me3 (+ control), and HA (PTHrP) CUT&RUN on MCF7V and MCF7P cells, and submitted DNA for sequencing. This study will define where PTHrP binds the genome and identify pathways regulated by PTHrP. Previously, through ChIP-qPCR we showed that PTHrP binds the LIFR promoter to repress LIFR expression. Given this result, we expect that PTHrP binds to the promoters of dormancy-associated genes including LIFR in MCF7P cells compared to MCF7V cells. PTHrP may be involved in regulating other processes besides dormancy to induce expansion of breast cancer cells in the bone, so we will use GSEA to identify pathways that are altered in MCF7P cells when PTHrP is over-expressed compared to MCF7V cells. Together, this will define how PTHrP regulates gene expression of bone metastatic breast cancer cells. DISCUSSION/SIGNIFICANCE OF IMPACT: This study will unveil mechanisms of metastatic breast cancer expansion in the bone by defining where PTHrP binds the genome to regulate gene expression. These findings will reveal therapeutic vulnerabilities that will be used to target bone-disseminated tumor cells to prevent lethal recurrence.

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A novel approach to developing and validating a predictive model of functional recovery for adults with stroke in post-acute rehabilitation

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OBJECTIVES/GOALS: To use patient-level Center for Medicare and Medicaid Services (CMS) mandated quality metrics for inpatient rehabilitation facilities (IRFs) to develop and validate predictive models of functional recovery and interactions of baseline characteristics with therapy time. METHODS/STUDY POPULATION: Retrospective cohort study of a national US sample of ~40,000 adults with a primary diagnosis of stroke admitted to IRFs in 2023. Records will be randomly allocated to equal training and validation samples. We will use a random forest approach to generate predictive models for self-care and mobility functional outcomes using patient baseline and demographic data from a CMS-mandated assessment for IRFs (Section GG). We will also examine how predictive variables modulate the effects of occupational, physical, and speech-language therapy minutes. The random forest is a machine-learning approach that trains multiple models and combines their predictions to improve their overall performance. RESULTS/ANTICIPATED RESULTS: Predictive models developed from the training sample will be applied to the validation sample to confirm their capacity to support new observations. Preliminary results will be reported, including the F1 score and area under the curve (AUC), with 95% confidence intervals. A unique feature of this study is the large sample, which contrasts with prior research in stroke rehabilitation using machine learning approaches. This study will produce powerful models that will inform the design of a clinical decision-support tool for application into clinical practice in a future study. DISCUSSION/SIGNIFICANCE OF IMPACT: By using CMS-mandated quality metrics that are collected as part of standard clinical practice in IRFs, results will support clinical interpretation and application of metrics and inform the development of a clinician-facing intervention to support personalized rehabilitation approaches.

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Comparison of profile and utility measures of health-related quality of life in pediatric Hodgkin lymphoma

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OBJECTIVES/GOALS: Our aim is to compare scores collected from a health utilities measure (Health Utility Index, HUI) to those collected from a profile measure (Child Health Ratings Inventories, CHRIs- Global) among youth with newly diagnosed, high-risk classic Hodgkin lymphoma. METHODS/STUDY POPULATION: We will analyze existing data collected during the Children's Oncology Group AHOD 1331 trial, which was a phase 3 clinical trial comparing the efficacy of adding brentuximab vedotin to standard-of-care treatment with multiagent chemotherapy in children and adolescents with high-risk Hodgkin lymphoma. The study also had a prespecified patient-reported outcomes (PRO) secondary aim, which involved recruiting a subset of the initial 309 patients aged 11 years or older enrolled in the trial for serial PRO measures taken over the trial period. Health-related quality of life (HRQoL) was assessed by CHRIs, HUI version 2, and HUI version 3 assessments at six planned points throughout treatment. RESULTS/ANTICIPATED RESULTS: The first step of our analysis will be to ascertain agreement in scoring for parent–child dyads for the HUI2, HUI3, and CHRIs scores by comparing mean scores via two-sample t-testing. Bland–Altman plots will be constructed to compare agreement between the scores for HUI2/3 and the CHRIs. Similarly, Spearman's correlation coefficients will be calculated for CHRIs with HUI2/3 for both parents and children. We hypothesize the CHRIs and HUI scores should roughly correlate with one another, but there may be divergence of correlation because the HUI has greater emphasis on functionality (e.g., sensation, mobility), and the CHRIs further emphasize social and emotional well-being in addition to physical health. DISCUSSION/SIGNIFICANCE OF IMPACT: The composite score of the HUI 2/3 has allowed for direct comparison with other global HRQoL measures, providing greater clarity of its performance in different patient populations and clinical settings. The current study will improve understanding of the HUI 2/3 performance in a pediatric cancer population over time.

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Evaluating prediction models for conversion of clinically isolated syndrome to multiple sclerosis: A systematic review*

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OBJECTIVES/GOALS: Accurately stratifying patients with clinically isolated syndrome by risk of developing multiple sclerosis is of great clinical importance. Though numerous prediction models attempt to achieve this goal, no systematic review exists to independently evaluate these models. We aim to systematically identify and assess the risk of bias in all such models. METHODS/STUDY POPULATION: Studies developing or validating prediction models

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