Abstracts

into the process as appropriate. RESULTS: Two main linguistic and conceptual issues emerged during the translation process. Firstly, when an original item used more than one adjective to cover a single concept, some languages only had one term to express this. Secondly, there was the challenge of using culturally appropriate expressions for taboo concepts such as suicide and self-harm, to ensure homogenous response across all languages. CONCLUSIONS: The language versions of the GAD-7 and PHQ-9 were established according to a rigorous standardized methodology to facilitate international comparison and pooling of data. The linguistic validation process aims to ensure concept equivalence across different language versions on the basis of a pre-defined concept list explaining what the original instrument should measure. The process as a whole supports the advantage of integrating international feedback on concepts and wording during the development of questionnaires.

**EVALUATION OF GLP-1 PRODUCT ATTRIBUTES IN TREATING PEOPLE WITH TYPE-2 DIABETES IN US: COMPARING TIME-TRADEOFF AND WTP-derived Estimates for Cost Utility analyses in Health economics**

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**OBJECTIVES:** To assess patient utilities for cost utility analyses in health economics two different ways of revealing preferences have been compared. Time trade-off (TTO) and willingness-to-pay (WTP) surveys have been completed comparing patients’ preference in product propositions. TTO yields estimates of the amount of time that patients are willing to forego to achieve desired product attributes, whereas WTP yields estimates of the amount of money that patients are willing to pay for product attributes. Despite their widespread use, results of the two methodologies have not, to our knowledge, been compared directly in diabetes. **METHODS:** The two methods were used to evaluate the reactions of people with type-2 diabetes to two GLP-1 inhibitors: diabetes was varied on four attributes: controlling blood glucose (measured by HbA1c), dosing frequency (twice-daily vs. once-daily), incidence of hypoglycemia, and incidence of nausea. To maximize statistical power and allow comparisons across patient groups, a large internet-based survey (more than 500 respondents) was conducted in U.S. with four categories of self-identified patients who were sampled based on their medication history, and randomly assigned to either the TTO or WTP. **RESULTS:** Results suggest that the WTP methodology yields greater face validity and sensitivity than TTO (100% of respondents prefer the superior profile in WTP vs. 96% in TTO). Data from joint analysis designed to establish the importance of each of the four product attributes in the decision-making process used by patients reveal similar patterns of results for the two methodologies. **CONCLUSIONS:** Regardless of whether patients were in the group assigned to TTO or WTP, patients perceive efficacy (HbA1c control) to be the most important product attribute, followed by incidence of nausea. Patients evaluated the incidence of hypoglycemia and dosing schedule as less important relative to the HbA1c control and nausea in the decision-making process.

**QUALITY-ADJUSTED LIFE YEARS SAVED BY PREVENTION OF HEAD INJURY THROUGH ENFORCEMENT OF HELMET LAW**

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**OBJECTIVES:** To evaluate the potential long-term health impact of helmet law, we calculated the quality-adjusted life year (QALY) under different patterns of helmet wearing among the motorcyclists. **METHODS:** The quality-adjusted life expectancies for helmeted and non-helmeted motorcyclists were estimated by adjusting the survival function based upon the Head Injury Registry with quality of life measures assessed under the EQ-5D questionnaire. We took Hualien County, where a lower rate of helmet wearing (77%) was reported, as an example to calculate the expected numbers of prevented head-injured cases by multiplying the population at risk with the incidence rate of head injury for helmeted and non-helmeted motorcyclists. As different proportions of helmet-wearing and different proportions of full-face helmet in motorcyclists were assumed, the expected numbers of prevented cases were calculated, which were multiplied with the loss of QALY of an average case to predict the potential benefit of helmet use. **RESULTS:** Under the current proportion of helmet wearing, the annual loss associated with head injured was $4346.9 QALYs in Hualien County. If the proportion of helmet wearing could be increased to 100%, the health benefit saved was estimated 1434.3 QALYs. If 80% of them used full face helmet, the total gain was increased to 2500 QALYs. **CONCLUSIONS:** The health benefit of helmet protection for head injury can be determined under units of quality-adjusted life year (QALY) and directly applied in future cost-effective analyses for public health policy.

**MEANINGFUL VERSUS USEABLE RESPONSES TO PREFERENCE SURVEYS: INSIGHTS INTO IMPROVING THE VALIDITY OF HEALTH UTILITY SCORES**

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**OBJECTIVES:** To identify the types of and reasons for unusable preference survey responses with the goal of informing improvements in health utility assessment methodology. **METHODS:** We define typologies that represent unusable responses from health utility surveys; present evidence from the literature on the frequency of such responses; present empiric data on the rationale for such types of responses; and discuss methods for handing data that contain such responses, and implications for interpreting analytic results based on health utility data. **RESULTS:** Potentially unusable health utility survey responses include (1) illogical, (2) inconsistent, (3) invariant, and (4) "protest" responses, plus (5) refusals. These response types are mistakes or misunderstandings of the survey task, which introduce noise into results, or they may be intentional responses to the parameters of the survey task that may confound respondents’ other values with the value of the health state being assessed. Usable responses can be avoided through anticipation and careful design of survey instruments, particularly for specific populations and health states, including cognitive testing prior to fielding. Usable responses can also be omitted from analyses or analyzed separately. **CONCLUSIONS:** Usable health utility survey responses challenge the validity of utility estimation and all analyses that incorporate these values, so it is critical to minimize these responses. Mechanisms to correct errors are useful, but may not address true preferences that are in response to elements of the measurement task and hence will not be corrected. Correction mechanisms may include tailoring the task to particular situations when bias is anticipated, such as parent valuations of children’s states or individuals who express religious beliefs. Recognition of the prevalence of unusable data in health utility data sets and identifying methods for handling these errors is essential to understand the accuracy and precision of results and analyses that depend thereon.
on desktop and tablet PC platforms. Results of the interviews informed the development and final testing of a standardized interface that can be used across studies to facilitate rapid deployment of ePRO studies.

**TRANSLATION OF THE PATIENT-REPORTED OUTCOMES MEASUREMENT INFORMATION SYSTEM INTO SPANISH**

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The Patient-Reported Outcomes Measurement Information System (PROMIS) provides accurate and efficient measurement of patient-reported outcomes. Developed in English using qualitative methods, PROMIS seeks to measure symptoms, such as pain and fatigue, and aspects of health-related quality of life across a wide variety of chronic diseases and conditions. OBJECTIVES: In order to enhance participation of the rapidly growing Spanish-speaking population of the USA it was necessary to translate PROMIS banks from English into Spanish using methods that would ensure linguistic equivalence and cultural appropriateness. METHODS: Five hundred and twenty-two items were translated into Spanish using the FACIT Multilingual Translation Methodology which consists of the following twelve steps: (1) translatability review of existing English items, (2) creation of item definitions, (3) two simultaneous forward translations, (4) reconciliation of forward translations, (5) back translation of reconciliation, (6) expert review of back translation and previous steps, (7) preliminary finalization for pilot-testing, (8) harmonization, (9) quality assurance, (10) formatting, (11) cognitive testing with native speakers of Spanish and (12) analysis and finalization of translations based on qualitative data collected during pilot-testing. Recognizing the need to address diversity within the Spanish-speaking population of the USA, translators from various Spanish-speaking regions across the globe were recruited to achieve a universal Spanish translation. RESULTS: Some of the linguistic challenges encountered during the translation process as well as the language solutions for resolving the challenges and implementing the cultural and linguistic heterogeneity of the Spanish-speaking population residing in the USA will be highlighted in this presentation.

CONCLUSIONS: Future research includes further validation of the Spanish translations using psychometric testing of the equivalence of banks in English and Spanish, including assessment of differential item functioning across different cultural groups. The translation of additional items into Spanish and into other languages is also explored in this presentation.

**ELECTRONIC PATIENT REPORTED OUTCOMES: FOLLOWING FDA GUIDANCE FROM A VENDOR PERSPECTIVE**

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OBJECTIVES: To provide an overview of considerations sponsors/vendors need to address in order to meet FDA expectations during the planning and implementation phases when using Electronic Patient-Reported Outcomes (ePROs) in clinical trials, to understand important considerations required in ePRO-use when planning and implementing clinical trials, identify essential considerations from a vendor's perspective, and following FDA guidance as a vendor or when using a vendor. METHODS: Sponsors often utilize vendors for the planning and implementation of their trials. When vendors are involved in these phases with the ePRO, it is not only the sponsor's responsibility, but also the vendor's to address considerations to ensure FDA expectations are met. However, meeting these expectations can be challenging across the pharmaceutical industry. To assist industry, the FDA released a Draft Guidance to communicate their perspective on how they evaluate ePRO-use for efficacy endpoints in clinical trials and for support claims made in approved product labeling. RESULTS: Often, sponsors/vendors are unsure how to follow the guidance and are unaware of important considerations necessary when incorporating them in clinical trials. These considerations include: standardizing data collection with electronic tools, handling missing values, validation, reliability, and responsiveness to clinically significant differences. EPRO-use in clinical trials requires careful planning and execution. When these considerations are not satisfied, the trials can face serious consequences by the FDA throughout the product development and approval processes. CONCLUSIONS: This session intends to provide an overview of how FDA ePRO-use expectations should be met from the perspective of a vendor during the planning and implementation phases of clinical trials. Key considerations will be discussed. Fictitious examples of what could go wrong will be presented. A summary of recommendations will be provided on how to follow the FDA guidance and avoid making critical errors when employing ePROs in clinical trials.

**THE POWER OF ASSUMPTIONS**

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OBJECTIVES: Studies powered using a dichotomous endpoint, are often too small to find significant differences in quality of life (QoL) or costs. Including the likelihood that events in both arms are similar, using either frequentist assumptions or Bayesian priors, may increase the power. METHODS: A study of patients with late pain is simulated. With therapy, 92% is expected to be pain-free, 8%. With placebo, the dichotomous power (pain vs no pain) is 80%. Using the EQ-5D utility score it is 40% (with the EQ-5D-pain dimension at 3 with pain at 0 and without pain in the other EQ-5D-dimensions at random population levels). Trials are simulated and T-tests are calculated based on: 1. QoL of patients with pain is identical in both arms; 2. QoL of patients without pain is identical in both arms; 3. 1 + 2. 95% credibility intervals are calculated using normal priors concerning the difference in QOL (per arm) with and without pain. Expectations and precisations are varied as well as base line probabilities. RESULTS: Making both assumptions, using T-tests, increases the power from 40% to 80%. Assumption 1 does so by 2%, assumption 2 by 79%. Both assumptions contribute equally when the expected pain-free levels are approximately 55% versus 44% instead of 95% versus 82%. The Bayesian model coincides with the frequentist approach when the precision in the priors concerning the differences in QoL are set to the extremes (zero or infinity). Between the extremes the Bayesian approach offers the flexibility to compromise. The power increase between the extremes can be characterized by a cumulative normal distributions on the log of the squared root of the precisions. CONCLUSIONS: Predifining logical assumptions in QoL analysis may increase the power of a study. The larger the group of patients the assumption is applied to, the bigger the power increase.