or sibutramine (10mg/d) in a randomized, controlled, single-blind clinical study, and evaluated weight and satisfaction during six-weeks of this treatment. RESULTS: A total of 40 females 36 +/- 4 yr with orlistat; and 40 females, aged 37 +/- 6 yr with sibutramine) completed six-weeks on exercise and a controlled-energy diet. Orlistat was well tolerated, with gastrointestinal adverse effects as well as inhibiting the assimilation of fat from the bowel. It was approved for long-term treatment of obesity while sibutramine acted on the CNS to control appetite or enhance the feeling of satiation. Significant body mass index (BMI) improvement was detected after six-weeks (p < 0.05) in both groups (p = 0.02, p = 0.04 respectively). Significant waist circumference (WC), but not significant hip circumference (HC), improvement were observed in both groups (p = 0.03, p = 0.14, p = 0.04, p = 0.21 respectively). Orlistat and sibutramine were not significantly different in terms of weight reduction effect (p = 0.14). However, patients were more satisfied with orlistat than sibutramine (p = 0.02). CONCLUSIONS: Orlistat and sibutramine could significantly reduce weight. However, patients were more satisfied with orlistat than sibutramine.

POB2
RECENT TRENDS AND A FUTURE FORECAST OF POPULATION BODY MASS INDEX LEVELS IN THE UNITED KINGDOM
Woehl A,1 Currie Cj2 1Kiel University, Kiel, Germany; 2Cardiff University, Cardiff, UK
OBJECTIVE: Patterns of obesity are an important public health consideration. The purpose of this study was to determine the past and future population trends of obesity in the UK (UK).
METHODS: Data describing body mass index (BMI) were abstracted from the English Health Survey's from 1991 to 2002, inclusive. The UK was assumed to follow the same pattern of change in body composition as England. The distributional pattern of BMI was determined and age and sex specific changes in the distribution described over the period. Data were standardized to the UK population in 2001. Ethnicity was accounted for in the forecast using general linear models for age and sex specific groups applied to government forecasts of future demography. RESULTS: BMI increased by a mean value of 1.21 kg/m² (standard error of the mean (SEM) 0.105 to 0.044 [±18 years]), equivalent to an annual increase of 0.11 kg/m² per year (95% CI 0.106 to 0.123). BMI in women increased on average from 25.6 to 26.8 kg/m², and men's from 25.9 to 27.1 kg/m². This varied by age and sex. The annual change in mean BMI was linear in every age group. In 1991 and 2002 the proportion of overweight (≥25.0 to <30.0 kg/m²) and obese (≥30.0 kg/m²) people in the population rose from 29.5% and 12.0%, to 31.3% and 18.4%, respectively. The number of overweight and obese people in the general population in 2004 was estimated to be 31.2 million people (52.6%), increasing to 38.0 million people (62.0%) in ten years time, an increase of 6.8 million people.
CONCLUSION: If reliable, this estimate clearly represents a serious public health challenge.

POB3
PREVALENCE TRENDS OF OVERWEIGHT AND OBESITY AND TREATMENT PATTERNS FOR WEIGHT CONTROL IN THE US POPULATION
Vo L, Valiyeva E, Shin HC, Suh DC, Barone JA
Rutgers University, Piscataway, NJ, USA
OBJECTIVES: To assess epidemiologic trends of overweight and obesity and to examine treatment patterns to control weight in children/adolescents aged 2–19 years and for adults ≥20 years old. METHODS: The Third National Health and Nutrition Examination Survey (NHANES III) conducted in 1988–1994 and NHANES 2001–2002 were used. Children/adolescents were classified as at risk for overweight if body mass index (BMI) was ≥85th–95th percentile and as overweight if BMI was at ≥95th percentile of the sex-specific BMI for age growth charts. Adults were categorized as overweight (BMI 25.0–29.9) or obese (BMI ≥ 30.0). Duration of physical activity was calculated using leisure-time physical activity to assess compliance of CDC/ASCM recommendations. SAS and SUDDAN software were employed to account for the complex survey design. RESULTS: The proportions of children/adolescents at risk for overweight or overweight increased from 13.1% to 14.5% and from 11.1% to 15.5%, respectively, between 1988–1994 and 2001–2002. The prevalence of overweight and obesity for adults also increased from 32.8% to 35.2% and from 22.3% to 30.2%. Prevalence of diabetes in overweight and obese adults slightly increased between 1988–1994 (5.5%, 10.0% respectively) and 2001–2002 (6.1%, 10.6%). However, LDL ≥ 130 mg/dl was less prevalent in 2001–2002 (53.4% to 41.8% for overweight and 54.0% to 41.0% for obesity). Overall, 10.3% of overweight and 14.9% of obese adults used liquid diet formula, prescription drugs, non-prescription drugs, laxatives or vomiting to control weight in 2001–2002. Only 1% of overweight and 3% of obese adults took prescribed diet pills. About 47% of overweight and 43% of obese adults either took medications or complied with physical activity recommended by CDC/ASCM to control weight. CONCLUSIONS: Overweight and obesity have become more prevalent in the US population during the past decade. However, very few patients took medications prescribed by their physicians to lose or control their weight.

POB4
RELIABLE MEASUREMENT OF OBESITY: RISK OF VASCULAR DISEASE COMPLICATIONS AS A FUNCTION OF BODY MASS INDEX AND WAIST-TO- HIP RATIO
Woehl A1, Currie Cj2, McEwan P, Peters JR3 1Kiel University, Kiel, Germany; 2Cardiff University, Cardiff, UK; 3University Hospital of Wales, Cardiff, UK
BMI is widely used to measure obesity in outcome studies, but other easily collected measures are available to characterise bodily shape. OBJECTIVE: The objective of this study was to determine whether BMI and waist-to-hip ratio (W:H-R), as standard measures of obesity, collectively better explained the likelihood of obesity-related complications. METHODS: This retrospective study used data from the England Health Survey, a national representative survey of the general population. Data describing BMI, obesity related diseases and other anthropometric measurements were abstracted from the survey 1991 to 1994, and 1997 to 2002. Using this data, a model was developed to account for various factors that could effect the development of obesity related diseases: diabetes, stroke, heart attack, hypertension and other vascular diseases. Using logistic regression, the association of between BMI categories further broken down by W:H-R categories was determined. The results were standardized for age, sex and ethnicity to generate standardized odds ratios comparing the accuracy of different anthropometric measurements and its combinations to predict obesity related diseases. RESULTS: BMI and W:H-R were independent predictors of disease in obesity. Using both these measures a more precise prediction of the likelihood of developing obesity related complications. Odds ratios in the group with the highest BMI of the sample varied between 1.6 and 2.8 conditional on their W: H-R. Patients with a medium BMI but high W:H-R had a higher relative risk (odds ratio 1.8) than patients with a high BMI but
low W:H-R (odds ratio 1.6). These patterns were even more obvious in diabetic patients. Similar results could be shown by combining BMI and waist circumference only. CONCLUSIONS: BMI in addition to W:H-R or waist circumference is a better and more precise predictor of obesity-related complications, and should where possible be preferentially used. Longitudinal obesity-related outcome data are needed.

POB5
COST EFFECTIVENESS OF SIBUTRAMINE IN THE LONG-TERM OUTCOMES OF SIBUTRAMINE EFFECTIVENESS ON WEIGHT STUDY
Malone D1, Raebl M2, Porter JA1, Lany F1, Conner DA2, Merenich JA1, Vogel EA4
1University of Arizona, Tucson, AZ, USA; 2Kaiser Permanente, Denver, CO, USA; 3Sanofi-Aventis Pharmaceuticals, Bridgewater, NJ, USA; 4Kaiser Permanente, Aurora, CO, USA
OBJECTIVE: To examine the cost-effectiveness of sibutramine plus a structured weight management program (WMP) versus only structured WMP. METHODS: Cost-effectiveness analysis based on a randomized controlled trial conducted within a managed care organization. The target population was obese or overweight persons. The economic time horizon was two years (pre and post study enrollment). Perspective was from that of a managed care organization. The treatment arms consisted of either sibutramine plus structured WMP or only WMP. The primary outcomes were change in weight and percent change in weight over 12 months, and change in obesity-related and total medical costs 12 months prior to and 12 months after enrollment. Non-parametric bootstrap was used to generate 95% confidence intervals for incremental cost-effectiveness ratios.
RESULTS: A total of 501 subjects were enrolled in the study, 281 receiving sibutramine plus structured WMP and 220 receiving only structured WMP. The mean (SD) weight loss was significantly greater in the sibutramine (13.7 (15.5) lbs) than the non-drug group (5.0 (13.2) lbs) (p < 0.001). Obesity-related total cost between groups were different (p < 0.001), with a median of $408 for sibutramine compared to $58 for the non-drug group. The ICER for sibutramine was $44 (95% CI: $42 to $46) per additional pound of weight loss. Sensitivity analysis suggested that changes in physician costs a negligible effect on the results. If the cost of sibutramine was excluded, there was no difference between the groups with respect to obesity-related costs. A limitation of this study is that costs were estimated using average wholesale price for medications. CONCLUSION: Patients enrolled in a weight management program receiving sibutramine had greater weight loss and decrease in BMI at greater cost than did patients enrolled in the same program who did not receive sibutramine.

POB6
COSTS OF OBESITY IN THE UNITED STATES AND EUROPE: A REVIEW OF THE LITERATURE
Budhirao I, Derleth A, Maron ML
Health Research Associates, Mountlake Terrace, WA, USA
OBJECTIVE: To provide a broad picture of the costs of obesity using data from the US and major European countries. METHOD: Literature (2000–2004) was searched via Medline using cost keywords: cost, cost-effectiveness, cost-benefit, cost-efficiency. Selected citations were reviewed by title and abstract, followed by retrieval of relevant articles, review and synthesis of cost information. RESULT: Direct medical expenditures for obesity in the US were estimated to be between $70–$94 billion and $331 billion—with all obesity associated comorbidities included. This represented approximately 5.7%–9.4% of the adult direct health spending. Cardiovascular disease and diabetes constituted approximately 70% of the obesity-related cost. Indirect costs associated with obesity were estimated to be at least $48 billion. The expected mean costs for persons with BMI = 30–34 and BMI = 35–39 were 12% and 19% higher (respectively) than persons with BMI < 25. Women spent more than men for obesity care. In the US, Wyoming showed the lowest expenditure for obesity ($87 million), and California the highest ($7.7 billion). Direct costs of obesity in Europe were estimated between 1.5% and 4% of total health expenditures, with the UK, Germany and France all showing similar expenditures (1.5%). Expenses associated with comorbid hypertension, coronary heart disease and diabetes were the main drivers of cost in the UK (80.5%). Indirect costs in the UK were estimated at £2.1 billion, of which £1.3 billion (61%) was due to work loss. Drug interventions using Orlisat, Sibutramine and Metformin were all cost-effective with the cost per QALY gained ranging between $8,327 to $19,968 (£4,780 to £45,881). CONCLUSION: The costs attributable to obesity in both the US and Europe represented a significant portion of the national health expenditure for those countries reviewed, with comorbid cardiovascular disease and diabetes constituting the major components of obesity associated health care costs.

POB7
LIFETIME COSTS ASSOCIATED WITH OBESITY: A COMPUTER SIMULATION MODEL
Tucker DM1, Minshall ME2, Palmer AJ1, Valentine WJ1
1CORE—Center for Outcomes Research, Binningen, Basel, Switzerland; 2CORE—USA, Fishers, IN, USA
OBJECTIVES: To estimate the health care costs and clinical outcomes of various body mass index (BMI) levels over a lifetime. METHODS: A Markov model was developed to perform cost-effectiveness/utility analyses to evaluate obesity treatments including lifestyle, pharmacological and surgical interventions. User-defined cohorts of obese adults can be followed over a lifetime assessing changes in costs and life expectancy. Baseline risk factors include age, gender, race and BMI. First and second order Monte Carlo simulation techniques were utilized. To compare the outcomes of three distinct BMI groups a 20 year-old Caucasian male with varying baseline BMI (25, 35 and 45 kg.m\(^{-2}\)) was chosen and it was assumed that no medical intervention was undertaken. The perspective was third-party reimbursement in a US setting. Mortality was adjusted for age, gender, race and BMI by Cox regression and applied to US life tables. Costs and utility values were adjusted for age, gender and BMI. US costs were derived from published resources and inflated to year 2004 figures. Reported outcomes included direct medical costs, life expectancy (LE) and quality-adjusted life expectancy (QALE) all of which were discounted at 3% according to US guidelines. RESULTS: Mean lifetime costs were $85,393 (±1545), $97,156 (±1836) and $97,542 (±2937) for BMI levels of 25, 35 and 45 kg.m\(^{-2}\) respectively. Undiscounted LEs were 54.43 (±1.47), 51.48 (±1.37) and 42.04 (±1.69) years respectively. Lifetime costs associated with a BMI of 45 kg.m\(^{-2}\) from age 20 were approximately 14% higher than costs associated with BMI 25 kg.m\(^{-2}\) and BMI 25 kg.m\(^{-2}\) versus 25 kg.m\(^{-2}\). Undiscounted life expectancy was reduced by 12.39 years and discounted QALE was reduced by 3.52 years for BMI 45 kg.m\(^{-2}\) versus 25 kg.m\(^{-2}\). CONCLUSIONS: Raised BMI is associated with substantially greater direct medical costs and diminished LE and QALE. This model will allow health economic evaluations of the outcomes of various anti-obesity interventions.