care integrating multiple measures of both resource use and clinical outcomes. Contemporary performance assessment technology only evaluates one outcome measure at a time and does not consider resource use.

METHODS: The basis for comparison is the technical efficiency with which providers transform resources into outcomes relative to peers. By identifying the highest level of performance—the efficiency frontier—the relative efficiency of each provider under evaluation is quantified. Relative efficiency is determined among diabetes care teams at Steno Diabetes Center, Denmark, over a 6-year period (1995–2000). Applied outcome measures follow recommendations of the Diabetes Quality Improvement Project and resources include clinical tests and patient care time of physicians, nurses and dieticians. Data Envelopment Analysis (DEA), a linear programming optimization technique, estimates relative efficiency, while regression analysis (RA) examines the robustness of the method. Impact of case-mix differences is examined by subgroup analysis. RESULTS: Over the study period, DEA identified a total of four teams on the frontier for clinical tests and ten teams for patient care time. Below frontier practice implied a 7% excess use of HbA1c tests, 12% blood pressure tests and 22% lipid measurements and 6% physician, 5% nurse and 13% dietician care time. Subgroup estimates implied less variation across teams and up to 30% reduction in predicted excess use of resources. When adjusting for clinical outcomes, RA identified an excess use of resources among the same teams operating below frontier in DEA. CONCLUSIONS: The method appears robust in identifying performance below frontier set by peers and a useful diagnostic tool for identifying efficiency gaps and setting targets for performance improvement in diabetes care. Identification of major subgroups in outcomes and resource use is important for practical implementation of the method.

PMD6
DEVELOPMENT OF A WEB-BASED SURVEY TO DETERMINE PRACTICE PATTERNS FOR TREATMENT OF ADVANCED STAGE BREAST CANCER IN FIVE EUROPEAN COUNTRIES
Ramsey SD1, Clarke L2, Donato B3, Sullivan SD4, Varela C5, Hermans N6, Boudreau D4
1Fred Hutchinson Cancer Research Center, Seattle, WA, USA; 2Cornerstone Systems Northwest, Lynden, WA, USA; 3Bristol-Myers Squibb Company, Wallingford, CT, USA; 4University of Washington, Seattle, WA, USA

OBJECTIVES: Although breast cancer is highly prevalent and the third leading cause of mortality for women in Europe, little is known about treatment patterns for women with this disease. Intra- or cross-country comparisons of treatment patterns are difficult due to the absence of automated data systems that capture clinical or health care claims records for representative population samples. To overcome this barrier, we designed and developed a web-based study to determine patterns of care in advanced stage breast cancer for France, England, Italy, Spain, and Germany. METHODS: The study includes three components: 1) survey design and validation; 2) web-translation of the survey; and 3) identification and recruitment of physicians to complete the survey. Survey Design: Country-specific and international treatment guidelines were collated into a comprehensive list of management strategies. The survey is grouped into categories: Initial evaluation; initial therapy; second and third-line treatment; monitoring; supportive care. Web Translation: The web site is designed to elicit specific answers rather than open responses. Drop down lists and check boxes facilitate completion. “Yes” answers to specific questions (“Chemotherapy is indicated: Yes/No”) direct the respondent to more detailed questions on the topic. Respondents log in with a secure ID/password, and can enter and exit as many times as is needed. Physician Recruitment: Physician key opinion leaders (KOLs) with expertise in breast cancer are recruited from each country (stratified by service area) in three separate phases.

RESULTS: In Phase I, KOLs review the “beta” web site, offering suggestions for improving its accuracy and comprehensiveness. In Phase II, a new group of KOLs complete the survey from their home or office. In Phase III, KOLs from Phase I review the summary results and comment on the findings. CONCLUSIONS: Although subject to certain limitations, the web-based survey offers an efficient strategy to determine practice patterns for advanced breast cancer.

PMD7
DATA ACQUISITION AND INTEGRATION FOR ANTIBIOTIC TREATMENT REPORTING
Haase M1, Sasaki P1, Fazio J2
1Strong Square, LLC, Kirkland, WA, USA; 2Northwest Pharmacy Services, Portland, OR, USA

OBJECTIVES: Develop a database tool to allow the administration, acquisition and integration of disparate medical, pharmacy, enrollment, and provider-specific data to measure adherence to a regional antibiotic treatment guideline program. Critical, innovative data management and patient confidentiality measures were developed and implemented to build a unified data set of antibiotic prescribing episodes. METHODS: Strong Square, LLC incorporated the medical, pharmacy and professional claims from seven participating health plans in Washington state to create an integrated database of patient-specific longitudinal data. This database was used to measure the impact of previously distributed antibiotic prescribing guidelines. Recent U.S. Federal regulations (HIPAA) require non-disclosure of patient-specific data and additional reporting limitations imposed by participating health plans submitting data required that all personal-identifiers be masked. To address this, Strong Square, LLC developed a cipher application that masks all personal identifiers without hindering the ability to
OBJECTIVES: Inappropriate use of antibiotics is now a well documented international health issue with implications for cost of care and antibiotic resistance. The objective of this study is to estimate the probability of receiving an antibiotic for an “inappropriate” diagnosis. Prescribing behavior, in general, has been the subject of research in many countries, but predictors of antibiotic prescribing have received little attention. METHODS: South Carolina Medicaid paid claims for 1996 to 2000 are used to estimate probabilities of receiving an antibiotic prescription for an upper respiratory infection (URI). Patient variables include demographics (age, race, gender, urban/rural location), URI history, ambulatory-service history, and hospital-use history, and URI diagnosis. Prescriber variables include practice load, URI patient mix, and practice specialty, and urban/rural location of practice. Probit analysis is used to estimate the probability of receiving an antibiotic prescription for a viral URI diagnosis. Year of service is included with the above variables to estimate a full-model. RESULTS: Probability estimates indicate that the most likely recipient of an antibiotic for a viral URI was female (0.270), non-white (0.269), and age 5 to 18 year old (0.326). Among prescribers the probability was highest for generalists (0.354), and pediatricians had a probability of 0.226. Overall, from 1996 to 2000, the rate of antibiotic prescribing for viral URIs decreased from 39% to 27%. Shifts in antibiotic use patterns also were observed with amoxicillin being the most frequently used drug in 1996 at 42%. Amoxicillin maintained its dominant position over the study period but newer antibiotics increased their share of total utilization. CONCLUSIONS: There was a general decline in antibiotic use from 1996 to 2000, but the rate of antibiotic prescribing for viral URIs remains high. The methods employed to track antibiotic use offer a relatively inexpensive approach to identifying and tracking potentially inappropriate prescribing.

OPTIMIZATION OF AIDS PILOT CLINICAL TRIAL USING LEAMSIM
Monleon T1, Ocanña J1, Vegas E1, Fonseca P1, Abbas I1, Casanovas J1, Cobo E1, Arnaiz JA1, Carné X2, Gatell JM4
1University of Barcelona, Barcelona, Spain; 2University of Barcelona, Barcelona, Spain; 3UPC, Barcelona, Spain; 4Hospital Clinic, Barcelona, Spain

The possibility of performing complete simulations of clinical trials, based on pharmacological action models, has been considered since the advent of the computer era, as a tool to optimise their practical realisation. Thanks to the advances in computation technology and in discrete event simulation tools, today it is possible to perform realistic, large-scale clinical trial simulations in a regular basis using suitable simulation tools. OBJECTIVES: We illustrate the process of use the realistic simulator LeanSim, previously for the concrete case of pilot clinical trials devoted to testing efficacy of the antiretroviral didanosine in a group of 50 patients with virologic failure presenting different mutations in the gen of HIV reverse transcriptase. It can origin resistance to transcriptase inhibitors and it can affects the efficacy of treatment designed to reduce the viral load in AIDS patients. METHODS: LeanSim is basically a discrete simulation tool developed in C/C++ that can be applied in any ambit, but accepts personalised elements construction, in order to adapt the simulation model to the reality that want to be simulated (this is the lean simulation metaphor). Other important LeanSim aspect is the way in with the model is constructed, this is, via the process definition, which is closer to the clinical trials experiment definition. RESULTS: LeanSim allow the population variability simulation (inter/intra patients) and its low cost let general use extend during optimisation previously the clinical trial starts. CONCLUSIONS: A simulation model based in Linear Mixed Models was estimated and during the simulation various scenarios were simulated to optimise sample size, effect of missing values, number of centres recruiting patients and the variability inter/intra patients and the previous results indicate the advantages of use this new tool.

GENETIC TESTING, PREDICTIVE GENETIC TESTING FOR HEREDITARY CANCER
Jonas S, Wild C, Schamberger C
Austrian Academy of Sciences, Vienna, MS, Austria