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The Value of Personalized Treatment (Rx) Planning (PTP): Cost Savings (sav) by the Microculture Kinetic (MiCK) chemosensitivity (CS) assay, Evidence from a Large American Self-insured Company (ASIC)

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Background:

Costs of cancer (CA) patient (PT) Rx are high. A novel CS assay MiCK was predictive of chemotherapy (CT) activity and survival in leukemia PTs (Blood 98: 241b, 2001) and is in solid tumor testing. We performed a cost sav analysis for CS assay in a large ASIC population.

METHODS:

An ASIC of 48,927 employees submitted 3.5 years claims data on all PTs with diagnoses of CA lung, breast, colon or ovary. Analysis of average Rx costs was made based upon total CT usage, Rx of selected PTs including therapeutic drug administration (admin), CT admin, supportive care (SC) drugs, CT drugs, biotherapy (BT) drugs, growth factors, home infusion costs, and cost of the MiCK assay. Average CT and BT drug costs were determined. We assumed high MiCK predictability for CT activity from solid tumor pilot studies and leukemia results. 4 models were evaluated: CT with a single active drug from MiCK for the duration actually given (ASC); CT with active drugs for the entire time (AC100); CT for 50% of the time period (AC 50) assuming a CT "holiday" for the other 50% of time; and CT with active drugs plus BT for 50% of the time (ACB 50). The costs in these 4 models were compared to actual claims payments.

RESULTS:

196 PTs had CA during the 3.5 year period. 55 had CT. Total costs for CT were \$5,647,165. Costs for IV CT drugs, SC drugs and drug admin were \$1,149,404. Assuming the use only of active CT selected by MiCK assay, under model ASC average sav/PT was 85.3% of CT, SC and admin costs. Under model AC100, the average sav/PT were 26.0%. Under model ACB 50, the sav were 48.6%. In model AC 50, the sav were 62.7%. When the overall costs were evaluated, model ASC sav were 17.4%, model AC 100 5.3% , model ACB 50 9.9% and model AC 50 12.8%.

CONCLUSIONS:

PTP using the MiCK CS assay could save a high percentage of CT costs, and a substantial percentage of overall costs of CA care in an ASIC. Sav varied from 9.9% to 62.7% depending on effectiveness and duration of Rx, and necessity for continuing BT not testable by MiCK. The true value of PTP with MiCK could be higher, since use of active CT would increase quality of life and employment, and reduce disability and side effects.

