PMD19

SAPT technology is not economically attractive. However, with technological advances in patient monitoring, the use of sensor-augmented pump therapy (SAPT) has gained interest. A recent study examined the utility of a collaborative intervention using structured self-monitoring (STeP)—a 1-year, prospective, cluster-randomized, multicenter study that aimed to assess the efficacy and cost-effectiveness of SAPT relative to multiple daily insulin injections (MDI). The study included patients with type 2 diabetes and compared the incremental reduction in HbA1c levels in type 1 diabetes patients compared to MDI.

OBJECTIVES: To assess the effects of SAPT in patients with type 2 diabetes and compare it to MDI.

METHODS: A randomized controlled trial (RCT) was conducted. Participants were randomly assigned to either SAPT or MDI. The primary outcome was HbA1c levels.

RESULTS: After 1 year, the mean HbA1c reduction in the SAPT group was 0.6 percentage points compared to MDI. The incremental reduction in costs for SAPT was $72,417/QALY. Sensitivity analyses revealed that evolving technologies could reduce the cost-effectiveness of SAPT.

CONCLUSIONS: SAPT is an effective and overall cost-neutral tool for management of type 2 diabetes.

PMD20

Objective: The objective of this study was to analyze the cost-effectiveness of a new index for prostate cancer detection.

METHODS: A new prostate cancer detection index was developed as a combination of serum prostate-specific antigen (PSA), free PSA, and a PSA precursor form. Use of this index to detect prostate cancer may be an important strategy for prostate cancer detection.

RESULTS: Compared to PSA test alone from the U.S. societal perspective, the new index was significantly more cost-effective, with a lower incremental cost-effectiveness ratio (ICER) of $24,012 per QALY. Sensitivity analyses revealed that evolving technologies could potentially save increasingly scarce healthcare funds for hospitals.

CONCLUSIONS:
1. The new index is an effective and overall cost-neutral tool for management of non-insulin treated patients with type 2 diabetes.
2. SAPT is an effective and overall cost-neutral tool for management of type 2 diabetes.
3. The new index is a potentially cost-effective strategy for prostate cancer detection.

PMD17

Analysis of cost drivers in structured SMBG in poorly controlled, non-insulin treated type 2 diabetes: results from the STEP study

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OBJECTIVES: Analyze the differential in selected direct costs of a collaborative structured blood glucose testing intervention in non-insulin treated patients with type 2 diabetes mellitus (T2DM) when compared to enhanced usual care (active control group [ACG]).

METHODS: Data was derived from the Structured Testing Program (STEP) a 1-year, prospective, cluster-randomized, multicenter study. A new test strip was added to the continuous glucose monitoring (CGM) system. The study included patients with type 2 diabetes. The CGM system was not reprogrammed to automatically prompt the participant to check the blood glucose level at the same time that the CGM data was presented. Use of a collaborative structured testing intervention using self-monitored blood glucose (SMBG) in 188 poorly controlled (HbA1c >7.5% T2DM) subjects compared to the ACG. The structured testing group (STG) used the ACCU-CHEK® 360® View 3-day profile tool that facilitates collection and interpretation of 7-point glucose profiles. From a payer perspective, direct costs of diabetes management, lab HbA1c tests, physician visits, and blood glucose testing strips associated with STG were compared to ACG using student t-test at a significance level of 5%.

RESULTS: In the intent-to-treat population, STG showed a significantly greater HbA1c reduction in MPPY compared to ACG (-0.3%; p = 0.0003). The increased HbA1c was not significant difference in direct costs between STG and ACG (p = 0.989). CONCLUSIONS: Use of a collaborative structured testing intervention improved HbA1c in STG without increasing direct cost. The increased HbA1c cost was offset by a decreased use of blood glucose test strips. As previously reported, STG subjects performed significantly fewer tests/day than ACG subjects (mean = 0.9 vs. 1.2, p = 0.0003) over the year. Structured testing, from a 1 year user perspective, is an effective and overall cost-neutral tool for management of non-insulin treated patients with type 2 diabetes.

PMD18

The cost-effectiveness of initiating sensor-augmented pump therapy versus 3-day daily injection in adults with type 1 diabetes: evaluating a technology in evolution

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OBJECTIVES: Sensor-augmented pump therapy (SAPT) demonstrated a significant reduction in HbA1c levels in type 1 diabetes patients compared to multiple daily injections of insulin (MDI) in a recent randomized trial. We analyzed the data on medical resource use collected within the trial and evaluated the long-term cost-effectiveness of SAPT versus MDI in adults with type 1 diabetes from the healthcare system perspective.

METHODS: We combined estimates derived from the trial data and the medical literature to populate the previously validated CORE Diabetes Model, which includes a series of Markov constructs that simulate the progression of diabetes-related complications. During the 52-week trial period, SAPT patients were provided insulin pumps and 3-day sensors. Electronic records indicated that sensors were worn only by patients 65% of the time. The incremental reduction in mean glycated hemoglobin was 0.6 percentage points in patients randomized to SAPT relative to MDI. The incremental reduction in cost was $24,995 vs. $19,238, respectively (p = 0.001). There was a significantly higher rate of blood transfusions with patients undergoing open surgery compared to patients undergoing laparoscopic procedures (p < 0.05). A 1-year prospective, cluster-randomized, multicenter study examined the utility of a collaborative intervention using structured self-monitoring of blood glucose (SMBG) in 483 poorly controlled (HbA1c >7.5%) T2DM subjects compared to the ACG. The structured testing group (STG) used the ACCU-CHEK® 360® View 3-day profile tool that facilitates collection and interpretation of 7-point glucose profiles. From a payer perspective, direct costs of diabetes management, lab HbA1c tests, physician visits, and blood glucose testing strips associated with STG were compared to ACG using student t-test at a significance level of 5%.

RESULTS: In the intent-to-treatment population, STG showed a significantly greater HbA1c reduction in MPPY compared to ACG (-0.3%; p = 0.0003). The increased HbA1c was not significant difference in direct costs between STG and ACG (p = 0.989). CONCLUSIONS: Use of a collaborative structured testing intervention improved HbA1c in STG without increasing direct cost. The increased HbA1c cost was offset by a decreased use of blood glucose test strips. As previously reported, STG subjects performed significantly fewer tests/day than ACG subjects (mean = 0.9 vs. 1.2, p = 0.0003) over the year. Structured testing, from a 1 year user perspective, is an effective and overall cost-neutral tool for management of non-insulin treated patients with type 2 diabetes.

PMD21

Is CyberKnife a cost-effective option for treating prostate cancer?

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OBJECTIVES: To assess the cost-effectiveness of CyberKnife (CK) compared to surgery and radiation therapies for the treatment of localized prostate cancer (PC) from societal and third party payer perspectives.

METHODS: A Markov model was used to compare treatment with CK, intensity-modulated radiation therapy (IMRT), protons (PT), and surgery in 10-year-old patients. The model included both procedure-related mortality and the comparative risks of long-term toxicity among survivors, defined as adverse events > grade 2 on Radiation Therapy Oncology Group scale occurring at least 12 months following treatment: genitourinary (GU); gastrointestinal (GI); and/or sexual dysfunction (SD). In the absence of evidence on comparative effectiveness we assumed that long-term disease control and mortality would not differ across treatments. Toxicity probabilities were derived using meta-analytical techniques. Utilities for adverse events were derived from a published survey of PC patients who were treated with CK or PT. The model projected expected lifetime costs and quality adjusted life years (QALYs) for each treatment. Efficacy was measured as the proportion of patients alive and free from disease at the end of the model horizon (10 years). The Markov model was run using a time horizon of 10 years.

RESULTS: CK was less costly with higher QALYs (dominant). From a payer perspective, surgery was least expensive followed by CK, IMRT and PT. How-

PMD22

Cost-effectiveness of epidermal growth factor receptor gene mutation testing in the selection of first-line therapy for patients with advanced non-small cell lung cancer in Ontario

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OBJECTIVES: To assess the cost-effectiveness of epidermal growth factor receptor (EGFR) gene mutation testing for the guidance of the administration of gefitinib as first-line therapy in patients with advanced non-small cell lung cancer (NSCLC) living in Ontario. METHODS: A decision analytic model was developed to compare EGFR gene mutation testing strategy in patients with advanced NSCLC. Under the testing strategy, patients tested positive for mutation would receive gefitinib as first-line therapy. Under no testing strategy, patients would receive conventional chemotherapy as first-line therapy. Probability variables were estimated through literature review. Utilities were estimated from a multivariate linear regression analysis taking into account of the clinical responses and side effects associated with treatment for NSCLC. Cost variables were based on two Ontario cost studies for NSCLC. Both benefits and costs were discounted at 5% per annum. RESULTS: Compared to no testing strategy, the incremental cost-effectiveness ratio for EGFR gene mutation testing was $46,021 per life year or $81,071 per quality adjusted life year (QALY). The cost-effectiveness of EGFR gene mutation testing was sensitive to the cost and efficacy of gefitinib. The budget impact analysis projected that EGFR gene mutation testing would cost Ontario $14 million per system $4.6M, $7.0M, $7.9M, $8.1M more a year in the next five years. CONCLUSIONS: EGFR gene mutation testing would not be cost-effective in patients with advanced NSCLC in Ontario until willingness-to-pay was above $81,000 per QALY. The efficacy and cost of gefitinib significantly affected the cost-effectiveness of EGFR gene mutation testing.