breast, lobular carcinoma, patients undergoing breast cancer surgery with 2 CPT codes with ambiguous category placement and septic patients at time of surgery. For each intervention, a total of 16 complications were clustered into 8 groups and examined over the 13-year period. ALN management was categorized as follows: no intervention on ALNs, or ALN surgery (SLNB or ALN dissection (ALND)). Chi-square tests were performed for demographic and complication rate analysis. Smoothed linear regression and non-parametric Mann-Kendall test assessed complication trends. Uni-variate and multivariate logistic regression were computed to associate odd’s ratio for comorbidities, surgical predictors and patients demographics. RESULTS/ANTICIPATED RESULTS: A total of 226,899 patients met the inclusion criteria. Annual breast surgery trends changed as follows: PM 45.6% to 45.9 (p=0.21), M 36.8% to 25.5% (p=0.001), M+R 15.7% to 23.6% (p=0.03) and OS 1.8% to 5.0% (p=0.001). Analyzing the patient cohort who underwent breast conservation, categorical analysis showed a decreased use of PM alone (96% to 90%) with an increased use of OS (4% to 10%). For the patient cohort undergoing mastectomy, M alone decreased (69% to 52%); M+R with muscular flap decreased (9% to 2%); and M+R with implant placement increased (20% to 41%)—all 3 trends p<0.0001. The rate of ALN management has changed as follows: SNLB or ALND significantly increased in mastectomy patients from 53.6% to 69.5% (SS 1.5%, R2 0.18, p<0.001). Overall complication rates were: PM: 2.25%, OS: 6.04%, M: 13.04% and M+1: 5.68%. The most common predictive risk factors were mastectomy interventions, increasing operative time, ASA class and BMI, smoking, recent weight loss, history of CHF, COPD and bleeding disorders (all p<0.001). Patients who were non-diabetic, younger (<60) and treated as outpatient all had protective OR for an acute complication (p<0.0001).

Do cancer survivors understand their risk factors for recurrence and the value of coordinated care between an oncologist and a primary care physician? A survey of endometrial and cervical cancer patients
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OBJECTIVES/SPECIFIC AIMS: To evaluate gaps in knowledge for women who are cancer survivors regarding the impact of comorbidities and lifestyle behaviors on endometrial and cervical cancer risk, and to assess prevalence of established care with a primary care physician (PCP) among patients and evaluate acceptability of referral to a PCP METHODS/STUDY POPULATION: Single institution cross-sectional study examining all women aged 18 or older with a diagnosis of cervical or endometrial cancer who present for care by a gynecologic oncologist at Barnes-Jewish Hospital/Washington University in St. Louis School of Medicine. Patients will be invited to complete a survey specific to cancer diagnosis that includes questions on participant background and sociodemographic information, knowledge of risk factors for their specific cancer site, and whether or not the patient has a primary care provider and the acceptability of referring RESULTS/ANTICIPATED RESULTS: Majority of women will be unaware of how comorbidities affect cancer risk and treatment outcomes. For women without a PCP, we anticipate that they will be accepting towards the notion of being referred to one for establishing care. DISCUSSION/SIGNIFICANCE OF IMPACT: Pilot information from this study will 1. Allow providers to improve cancer survivorship care plans by increasing collaboration between PCPs and oncologists to provide ongoing care, and 2. Afford information for providers on where gaps in knowledge exist so as to better education patients.

Examining the association between inpatient opioid prescribing and patient satisfaction
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OBJECTIVES/SPECIFIC AIMS: Research overview: Providing patient-centered care is increasingly a top priority in the U.S. healthcare system.1,2 Hospitals are required to publicly report patient-centered assessments, including results from the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) patient satisfaction surveys.3 Furthermore, clinician and hospital reimbursements are partially determined by performance on patient satisfaction measures.3 Consequently, hospitals and clinicians may be incentivized to improve patient satisfaction scores over other important outcomes.4 Paradoxically then, the pursuit of patient-centered care may lead clinicians to fulfill patient requests for unnecessary and potentially harmful treatments.5 Opioid prescribing during hospitalizations may be particularly affected by clinicians’ seeking to optimize patient satisfaction scores.6,7 Satisfaction with pain care is an important predictor of overall patient satisfaction in the HCAHPS surveys.8,9 and clinicians report increased pressure to fulfill patient requests for immediate pain relief.10,11 Therefore, clinicians may prescribe opioids to avoid receiving lower patient satisfaction scores.12,13 Furthermore, clinicians lack clear guidance on opioid prescribing for some populations, including non-surgical inpatients, who represent almost half of all hospitalizations.14 To reduce clinicians’ incentive to prescribe opioids as a means of achieving patient satisfaction, the Center for Medicare and Medicaid Services (CMS) temporarily removed questions related to patient satisfaction with pain care from the clinician and hospital reimbursement formulas beginning in 2018.15 Importantly, prior research16-20 has not rigorously tested the hypothesis implied by the CMS policy change: that certain opioid prescribing practices in inpatient pain care are associated with higher patient satisfaction. Objectives: The purpose of this study was to evaluate the association between the receipt/dose of opioids during non-surgical hospitalizations and

https://doi.org/10.1017/cts.2019.277 Published online by Cambridge University Press
patient satisfaction measured by the HCAHPS survey. METHODS/
STUDY POPULATION: Methods/Study Population: We conducted
a pooled cross-sectional study of adults (18 and older) with non-sur-
gical hospitalizations within the 11-hospital healthcare system in a
Midwestern state from 2011-2016. Data were extracted from elec-
tronic health records and linked to HCAHPS patient satisfaction sur-
evys. We estimated the propensity score for receipt of any opioids
during hospitalization and separately the receipt of high dose opioids
(≥100 morphine milligram equivalent [MME]) based on patient,
encounter, and facility characteristics for all hospitalizations with
complete data. We used nearest neighbor matching to construct
two matched samples to minimize selection bias and confounding
by indication. We used a standardized difference threshold of
< 0.1 as an indication of the balance between matched groups.
Outcomes were compared with a test on the equality of proportions
using large-sample statistics. All analysis was performed in STATA
14.0 analytical software. Main outcomes: We analyzed four depend-
ent variables. Two pain-specific patient satisfaction variables were
derived from the responses to the following survey questions: 1)
“During this hospital stay, how often your pain was well controlled?
(pain control)” and 2) “During this hospital stay, how often did
the hospital staff do everything they could to help you with your pain?
(pain help)”, with 4-point Likert scale responses ranging from
“Never” to “Always.” We also used two global satisfaction measures
derived from the responses to the following survey questions: 1)
“Using any number from 0 to 10, where 0 is the worst hospital pos-
sible and 10 is the best hospital possible, what number would you use
to rate this hospital during your stay (overall patient satisfaction)”
and 2) “Would you recommend this hospital to your friends and
family (willingness to recommend a hospital)?” (4-point scale of
“Definitely Yes” to “Definitely No”). Because the responses are
not normally distributed, and the response options are truncated,
we dichotomized each of these questions following previously pub-
lished approaches8 and CMS methodology3 (e.g. “always” vs. “9 or 10 rating” vs. all others). RESULTS/
ANTICIPATED RESULTS: Results: Among 17,691 patients who
reported that they needed pain medications during hospitalization
in their HCAHPS survey, 43.7% (n=7,735) received opioids.
Among the matched sample (n=8,848), 55% were female, 90% were
white, 9% were black, 74% were emergency admissions, 29% had a
circulatory diagnosis, 92% were discharged home, and the average
pain score ranged from 0.2 to 7.1 during the hospital stay.
Compared to matched patients hospitalized but did not receiving
opioids, those who received opioids did not significantly differ in
their rating of pain help (75% of patients without opioids rated that
they always received help for their pain versus 75% of patients with
opioids; p=.78), pain control (55% of patients without opioids
reported that their pain was well controlled versus 54% on opioids;
p=.93), willingness to recommend the hospital (69% of patients with-
out opioids reported that they would definitely recommend a hospital
versus 71% with opioids; p=.16) and overall rating of their care
(47% of patients without opioids rated their hospitalization as 10 ver-
sus 46% on opioids; p=.22). DISCUSSION/SIGNIFICANCE OF
IMPACT: Discussion: We found no evidence that receipt of opioids
is associated with patient satisfaction, including at doses. To our
knowledge, this is the first study that used propensity score matching
to examine the association between inpatient opioid prescribing
practices and patient satisfaction. Furthermore, our sample is unique
in the inclusion of patients hospitalized for non-surgical indicators
over a five year period in the multi-hospital healthcare system in a
Midwestern state. Our findings add to the existing literature which
has shown contradictory associations between opioid prescribing
and patient satisfaction.16-22 Specifically, few studies that looked
at surgical inpatients showed a lack of association between patient
satisfaction16,18 and opioid prescribing, whereas others showed that
receipt of opioids was associated with lower patient satisfaction.17-
20 Our findings may imply that satisfaction with pain care may be
achieved without administering opioids to non-surgical inpatients.
Alternatively, satisfaction with pain care may not be influenced by
opioid prescribing for non-surgical inpatients. Future research
should further examine the association between opioid prescribing
and patient satisfaction among non-surgical inpatients on a national
scale to get a better understanding of the relationship between certain
pain care practices and patient satisfaction.

Identification of a Cohort to Study Treatment Patterns in
Elderly Patients with Incident Hodgkin Lymphoma (HL)
using Surveillance, Epidemiology and End Results
(SEER)-Medicare Data

Susan Parsons

OBJECTIVES/SPECIFIC AIMS: (1) To define and describe a cohort
of patients aged ≥65 years with incident HL from SEER-Medicare
data. (2) To identify patient, disease, and system-level factors
associated with initial treatment for HL. METHODS/STUDY
POPULATION: This retrospective cohort study utilized SEER-
Medicare data from 1999-2014. Patients with incident classical HL
were identified using SEER registry histology groupings. The cohort
was restricted to those with Medicare Part A and B fee-for-service
for 3 months prior to and 1 year after diagnosis (or until date of death)
in order to fully capture claims for outpatient chemotherapy. Patients
were excluded for the following reasons: missing month of HL diag-
nosis; unknown diagnostic confirmation; reporting from autopsy
or death certificate; or another cancer diagnosis within 2 years
of the HL diagnosis. Demographic and disease characteristics were
developed based on SEER registry data. Broad treatment categories
were defined using SEER data, while detailed treatment categories
will be defined based on Medicare claims. Length of follow-up
was defined as the number of months until the earliest of the follow-
ing: death; end of continuous Medicare Part A and B fee-for-service
enrollment; or the end of the available data (12/31/2014). Demo-
graphic, disease, and preliminary treatment characteristics were
described for the cohort. Future analyses will explore patient and dis-
ease factors, including comorbidities and an estimate of frailty, as
well as system-level factors associated with initial treatment of HL.
RESULTS/ANTICIPATED RESULTS: We identified 2909 patients
meeting eligibility for the cohort. The median length of follow-up
was 22 months (Q1=5, Q3=62). Median age was 75.9 years (Q1=70,
Q3=81), 49.6% were female, and 82.6% were non-Hispanic/White.
Only 11.5% of patients were in rural or non-urban areas. 13.8%
of patients were dual eligible for both Medicare and Medicaid.
Nodular sclerosis was the most common histology (35.2%), followed
by mixed cellularity (21.1%); 36.5% had histology that was not oth-
wise specified. Patients were evenly distributed across Ann Arbor
Stage (21.8% with I; 22.3% with II; 25.8% with III; 24.2% with IV; 6%
unknown). B symptoms were present in 35.2% of patients, absent in
39.6%, and unknown in 25.2%. Neither tumor bulk nor international
prognostic score were available via SEER registry data. According to
SEER registry data, most patients received some treatment for their
HL (81.9%) and 75% of those patients initiated treatment within one