

MEDICAL AND SOCIETAL COSTS ASSOCIATED WITH INCIDENTAL OVARIAN CYSTS ON ULTRASOUND

Xi Xue, MD¹, Gregory Nicola, MD², Soterios Gyftopoulos, MD, MSc¹, Danny Kim MD¹,
Andrew Rosenkrantz, MD, MPA¹

¹NYU Langone Health, New York, NY, ² Hackensack Radiology Group, New York, NY

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Purpose

To explore downstream medical and societal costs associated with ovarian cysts incidentally detected on ultrasound

Methods

- 200 consecutive incidental ovarian cysts detected on ultrasound
- All associated down stream events (imaging, office visits, and surgery) were identified from the EHR
- Radiologist recommendations and ordering physician managements were classified in accordance to adherence to Society of Radiologist in Ultrasound (SRU) guidelines
- Medical costs reflected national Medicare rates.
- Societal costs reflected national hourly wage rates x number of hours of missed work associated with each event

Classifying Radiologist Recommendations and Ordering Physician Management

Radiologist
Recommendation in
Relations to SRU

- Adherent
- Under-recommending
- Over-recommending

Ordering physician
management in
Relations to SRU

- Adherent
- Under-recommending
- Over-recommending

Relationship of Ordering
Physician Management
to Radiologist
Recommendations

- Adherent
- Under-management
- Over-management

Estimating Medical and Societal Costs

Event	Medical Costs			Societal Costs			Total Costs
	CPT code(s)	Medicare PFS Payment	Total	Hours	Hourly wage ^e	Total	
<i>Pelvic ultrasound</i>	76856 (TA pelvic), 76830 (TV pelvic)	\$112.69, \$124.89	\$237.58	3	\$35.28	\$105.84	\$343.42
<i>Pelvic MRI</i>	72197 (pelvic MRI w/ & w/o IVC)	\$512,13	\$512,13	4	\$35.28	\$141.12	\$653.25
<i>Abdominopelvic CT</i>	74177 (abdominopelvic CT w/ IVC)	\$315.46	\$315.46	3	\$35.28	\$105.84	\$421.30
<i>¹⁸F-FDG PET/CT</i>	78815 (PET localization), 71260 (chest CT w/ IVC), 74177 (abdominopelvic CT w/ IVC)	\$1,355.88 ^b , \$232.56, \$315.46	\$1,903.90	4	\$35.28	\$141.12	\$2,045.02
<i>Follow-up office visit</i>	99213 (established patient; low or moderate severity problem; 15 minutes face-to-face contact time)	\$73.93	\$73.93	4	\$35.28	\$141.12	\$215.05
<i>Pelvic surgery</i>	MS-DRG 743 ^a	\$20,456.31 ^c	\$20,456.31	16+40 ^d	\$35.28	\$1,975.68	\$22,431.99

CPT=current procedural terminology. PFS=physician fee schedule. MS-DRG=Medicare severity-diagnosis related group. TA=transabdominal. TV=transvaginal. IVC=intravenous contrast.

a. Represents “uterine and adnexal procedure for non-malignancy, without major complication or comorbidity”

b. Represents estimate using Harvey L. Neiman Health Policy Institute Inpatient Cost Evaluation Tool

c. Represents rate from Hospital Outpatient Prospective Payment System

d. Represents 2 days hospital stay and 5 days recovery

e. Represents salary and benefits,

Results

Total downstream medical and societal costs associated with incidental ovarian cysts

Cohort	n	Cost per cyst
<i>Entire sample</i>	200	\$1,817
<i>Menopausal status</i>		
-Pre-menopausal	150	\$1,573
-Post-menopausal	50	\$2,852
<i>Explicit radiologist recommendation</i>		
-No	48	\$1,490
-Yes	152	\$2,020
<i>Radiologist recommendation vs. SRU recommendations</i>		
-Adherent	90	\$1,690
-Under-recommending	27	\$3,755
-Over-recommending	73	\$1,565
-Incomplete	10	\$1,077
<i>Ordering physician management vs. radiologist recommendation</i>		
Adherent	95	\$2,003
-Under-management	87	\$997
-Over-management	18	\$5,635
<i>Ordering physician management vs. SRU recommendations</i>		
-Adherent	92	\$1,075
-Under-management	64	\$1,720
-Over-management	44	\$3,853

Results

- In multivariable analysis, only over-management relative to SRU recommendations by the ordering physician was a significant independent predictor of downstream costs.

Results

- Only four neoplasms detected in entire cohort:
 - 2 serous cystadenoma
 - 1 mucinous cystadenoma
 - 1 struma ovarii
- No ovarian malignancy detected.
- Average cost per neoplasm: \$90,843

Discussion

- Estimates of the downstream costs of incidental imaging findings need to consider not only direct medical costs, but societal costs as well (e.g., loss of productivity due to time missed from work).
- Downstream costs increased when the radiologist provided an explicit management recommendation, when the radiologist's recommendation was under-recommending relative to SRU recommendations, and when the ordering physician over-managed relative to either the radiologist's recommendation or to SRU recommendations.

Conclusions

- We piloted a novel model to explore downstream medical and societal costs associated with incidental ovarian cysts
- The observations have implications for new practice and payment models in which radiologist take greater accountability for ensuring that patient receive appropriate imaging follow-up for incidental imaging findings

Future Directions

- Apply this novel model to explore downstream medical and societal cost associated for other incidental findings, such as lung nodules on CT, pancreatic cysts on MRI, and thyroid nodules on ultrasound.