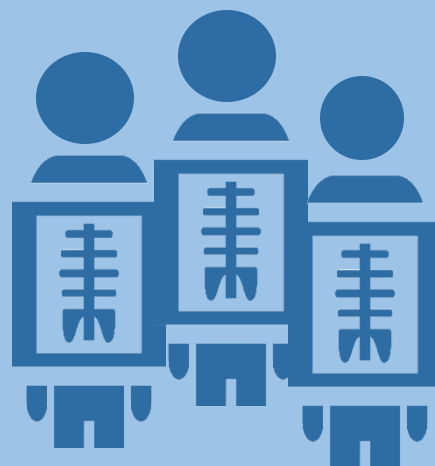


RADIOLOGY QI/RESEARCH NETWORK UPDATE

2020



WELCOME

to the inaugural KPNC Quality Improvement and Radiology Research Network Update!

In this issue, we will provide you with updates regarding research interests among KPNC radiologists, information on upcoming radiology events, upcoming internal research funding opportunities, and a list of the incredible research published recently by KPNC radiologists.



A DEEPER LOOK INSIDE THIS UPDATE:

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KPNC Radiologists are Interested in Research

A total of 55 (!) KPNC radiologists have indicated an interest in research and responded to our survey and provided information about specific topic areas of interest and research recommendations.

Survey Results



There is a lot of collective research experience among the KPNC radiologists. Many of those completing the survey (69%) completed research projects during training and, similarly, 56% have conducted chart reviews for research projects. 10% of respondents have recruited patients for research studies in their clinics, and around 7% currently have their own funding for a study

Almost all the respondents expressed interest in being involved in research. Around 40% indicated an interest in either leading their own project or participating as a co-investigator on a project. 55% indicated an interest in working on projects led by other investigators. There was also interest in mentorship, developing skills needed to lead research independently, and contributing to and leading manuscript writing.

Interested in hearing about other QI/research opportunities? Fill out our survey to let us know about your background and interests:

<https://www.surveymonkey.com/r/WNWNRL>

Research Highlight:

Standardized Reporting and Management of Suspicious Findings on Chest CT Imaging Is Associated With Improved Lung Cancer Diagnosis in an Observational Study

Thomas H. Urbania MD, Jennifer R. Dusendang MPH, Lisa J. Herrinton PhD, Stacey Alexeeff PhD, Douglas A. Corley MD, PhD, MPH, Sora Ely MD, Ashish Patel MD, Todd Osinski MD and Lori C. Sakoda PhD, MPH. *Chest*, 2020-11-01, Volume 158, Issue 5, Pages 2211-2220, Copyright © 2020 American College of Chest Physicians

Background

Follow-up of chest CT scan findings suspicious for lung cancer may be delayed because of inadequate documentation. Standardized reporting and follow-up may reduce time to diagnosis and care for lung cancer.

Study Design and Methods

We implemented a reporting system that standardizes tagging of chest CT scan reports by classifying pulmonary findings. The system also automates referral of patients with findings suspicious for lung cancer to a multidisciplinary care team for rapid review and follow-up. The system was designed to reduce the time to diagnosis, particularly for early-stage lung cancer. We evaluated the effectiveness of this system, using a quasi-experimental stepped wedge cluster design, examining 99,148 patients who underwent diagnostic (nonscreening) chest CT imaging from 2015 to 2017 and who had not received a chest CT scan in the preceding 24 months. We evaluated the association of the intervention with the incidence of diagnosis and surgical treatment of early-stage (I, II) and late-stage (III, IV) lung cancer within 120 days of chest CT imaging.

Results

Forty percent of patients received the intervention. Among 2,856 patients (2.9%) who received diagnoses of lung cancer, 28% had early-stage disease. In multivariable analyses, the intervention was associated with 24% greater odds of early-stage diagnosis (OR, 1.24; 95% CI, 1.09-1.41) and no change in the odds of late-stage diagnosis (OR, 1.04; 95% CI, 0.95-1.14). The intervention was not associated with the rate of surgical treatment within 120 days.

Interpretation

In this large quasi-experimental community-based observational study, implementation of a system that combines standardized tagging of chest CT scan reports with clinical navigation was effective for increasing the diagnosis of early-stage lung cancer.

Implications

We've shown that we can standardize reporting on pulmonary nodules and bring together a multidisciplinary subspecialty team to guide care, with increased detection of early stage lung cancer. Further efforts will aim to decrease the time from the initial suspicious finding to definitive therapy with the goal of improving patient outcomes.

Internal Research Funding Opportunities



General Funding Opportunities



Division of Research



Delivery Science and Applied Research

List of On-Going or Potential Projects

Body Imaging

- 1) Validation of LI-RADS (Eleanor Ormsby, Grace Oh, SAC)
- 2) Evaluating yield of pancreatic cyst hashtag (Eleanor Ormsby, SAC; Tory Clague, SRF)
- 3) Evaluating yield of adrenal mass hashtag (Prasad Murthy, Tory Clague SRF)

Breast Imaging

- 1) Utility of ultrasound for palpable lumps in fatty breast women (Dawn Nwamuo, Grace Lin, GSAA - CB grant 2021)
- 2) Mammographic screening trends and effects on harms and benefits (Vignesh Arasu, NSA - CB grant 2020)
- 3) Validation of risk models used for recommending high risk MRI screening (Vignesh Arasu, NSA - DS grant 2020-2022)
- 4) Evaluation of artificial intelligence algorithms for triage of mammographic screening (Dan Navarro, Vignesh Arasu, Dorota Wisner)
- 5) Evaluation of artificial intelligence algorithms for risk prediction / COVID 19 risk stratification (Dan Navarro, Vignesh Arasu, Dorota Wisner)
- 6) Track request for axillary LN imaging with US to assess accuracy and clinical utility
- 7) Review and standardize papilloma recommendations for follow up/treatment (Jackie Sharkey, GSAA)
- 8) Evaluate pleomorphic LCIS vs pure LCIS as indicators of risk (Virginia Kim, GSAA)
- 9) Evaluate sensitivity/specificity of self reported vs breast clinic detected breast lumps as corroborated by mammo (Grace Lin, GSAA)
- 10) Evaluate the idea of screening questionnaires for domestic violence at time of annual mammogram (Grace Lin, GSAA)

Interventional Radiology

- 1) IVC filters and HIT (Stephen Wang, SCL)
- 2) Complex IVC filter retrievals: predictors of success and complications (Stephen Wang, SCL)
- 3) Long term IVC filters: development of algorithm for risk stratification and decision analysis for retrieval (Stephen Wang, SCL)
- 4) Integrated IVC filter tracking within an EMR (Stephen Wang, SCL)
- 5) Review biopsy results acquired to evaluate for infection to better characterize yield and reassess utility of these requests

Musculoskeletal

- 1) Retrospective report review using Philips Performance Bridge to characterize need for Knee MRI in patients >55 y/o w/ abnormal radiographs (Thomas Huang, SSF)
- 2) Standardize indeterminate bone lesion reporting and establish tracking system to better characterize and assess risk

Nuclear Medicine

- 3) Use etiology specific templates to standardize PET/CT CT findings/reporting (Sundeeep Naya, GSAA)
- 4) Ga Dotatate PET assessment of treatment response (Adren Kwan, DSA)

Standardization/Quality Improvement

- 1) Standardized Reporting/verbiage for Top Diagnoses (PE, Dissection, brain bleed, PNA, appendectomy, diverticulitis, DVT, etc. . .) (Kareem Mawad, SSF)
- 2) Standardized phrases for negative "r/o exams" (Kareem Mawad, SSF)
- 3) NLP to retrospectively mine US to rule out hydro and determine if there are more specific pre-test predictors of positivity (Kareem Mawad, SSF)
- 4) Incorporating a single page including standard anatomic diagrams of the c-spine, rib cage, upper extremity, wrist, lower extremity, ankle, and foot into the ordering system to improve pain localization on radiographs (Kareem Mawad, SSF)
- 5) 4a) Investigate how to get more accurate clinical histories provided in orders (include images of body parts for pain work ups? provide real time feed back to ordering clinicians at time of dictation via messaging?)
- 6) Automatic EPIC identification of the words ADDENDUM or ACTION REQUIRED to tag those reports are yellow or red in Health Connect (Request from Irene Moy and the OBGYN group) (Kareem Mawad, SSF)
- 7) Develop a better PROCESS of developing and maintaining the best templates for use across all of radiology reporting (Don Udall, Fresno)
- 8) Map out and reduce the variability in protocol and naming conventions across NCAL imaging (Don Udall, Fresno)
- 9) Augment templates field names to include more pertinent positives and negatives to ensure adequate standardized search patterns

Utilization/Appropriateness

- 1) Inappropriate Utilization Hashtag for high volume, almost always negative exams (renal ultrasound for AKI/Hydro, PE <40 y/o, DVT, etc. . .) to at least start tracking it (Kareem Mawad, SSF)
- 2) Natural Language Processing (NLP) for automatic Wells Criteria Calculations to help reduce PE ordering (Kareem Mawad, SSF)
- 3) Evaluate immediately "redundant imaging" to asses for which are unnecessary vs which change management (RUQ US after CT, Pelvic US after CT, VQ after PE CTA, etc. . .)

- 4) Revisit need for and standardize regional oncology staging protocols (who really need a C/A/P, etc . . .)
- 5) Reassess need for daily/very frequent inpatient radiographs
- 6) Pre-test risk stratification on nearly every exam to evaluate for low yield imaging

Recent Publications or other Scholarly Work Co-authored by KPNC Radiologists 2018- 2020

Accessory anterolateral talar facet associated with tarsal coalition: prevalence and cross-sectional characterization.

Alqahtani E, Fliszar E, Resnick DL, Huang BK.

Skeletal Radiol. 2020 Mar;49(3):417-424. doi: 10.1007/s00256-019-03293-y.

PMID: 31402414

CT Attenuation of Acute Subdural Hematomas in Patients with Anemia.

Duy L, Badeeb A, Duy W, Alqahtani E, Champion W, Kim DH, Martin D, Vartanians V, Coffin P, Small JE.

J Neuroimaging. 2019 Jul;29(4):536-539. doi: 10.1111/jon.12608. Epub 2019 Feb 16.

PMID: 30771278

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Mamlouk MD, Zimmerman B, Mathes EF, Rosbe KW. Hearing loss in PHACE syndrome: clinical and radiologic findings. *Childs Nerv Syst*. 2018 Sep;34(9):1717-1724. doi: 10.1007/s00381-018-3822-x. Epub 2018 May 10. PMID: 29748705.

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