



Effective Health Care

Effectiveness of Antibiotics Use Prior to a Surveillance PET Scan in Patients with a History of Cancer to Decrease the Rate of False Positives

Results of Topic Selection Process & Next Steps

- Development of an AHRQ evidence review on the topic, *Effectiveness of Antibiotics Use Prior to a Surveillance PET Scan in Patients with a History of Cancer to Decrease the Rate of False Positives*, does not seem feasible at this time. For Key Question 1, a search of PubMed identified more than 100 clinical trials from the past five years on the use of PET scans for surveillance for a range of cancer types. Similarly, a search of ClinicalTrials.gov returned more than 60 potentially relevant open trials that also varied in terms of types of cancer. However, upon closer review of these published studies and open trials, the majority focused only on the accuracy of PET scans and not on the use of surveillance PET scans and improvement in patient clinical outcomes such as progression-free survival and overall survival. For Key Questions 2 and 3, the feasibility search did not return any relevant studies
- The topic, however, does appear to be one of importance, could have a great impact, and may serve the general public well as potential new research. No further activity will be undertaken by the EHC at this time.

Topic Description

Nominator(s): An anonymous physician via the web

Nomination Summary: The nominator asserts that positron emission tomography (PET) scans are increasingly being used for surveillance for cancer recurrence; however, false positives have resulted in additional interventions such as surgery, which may turn out to be unnecessary and are expensive. This nominator describes seeing many cancer patients in their institution getting PET scans every six months and often undergoing surgery for node removal even though true positives are rare. The nominator would like to know if antibiotic therapy prior to PET scans for patients with a cancer diagnosis could decrease the false positive rate of lymph nodes in the head and neck and also wonders how often the scans should be performed.

Key Questions from Nominator:

1. What is the sensitivity and specificity of PET scans for cancer surveillance for patients with a history of cancer?
2. Does antibiotic therapy reduce the false positive rate of PET scans for patients with a history of cancer?
3. How often should surveillance using PET scans be performed in patients with a history of cancer?

Considerations

- The topic meets EHC Program selection criteria. (For more information, see <http://effectivehealthcare.ahrq.gov/index.cfm/submit-a-suggestion-for-research/how-are-research-topics-chosen/>.)
- PET scans represent one imaging technique that can be used to detect cancer recurrence. However, the American Society of Clinical Oncology (ASCO), through the Choosing Wisely campaign, recommends against their use for this purpose unless it can result in improved patient outcomes (e.g., improved survival). PET scans

can produce false positive results, resulting in unnecessary invasive procedures, over-treatment, unnecessary radiation exposure, and misdiagnosis. This topic nomination suggests that understanding whether taking antibiotic therapy prior to PET imaging can improve the accuracy of results could help to inform clinical practice.

- Based on our findings from a search of existing guidance, a new AHRQ product on Key Question 1 would likely not duplicate an existing systematic review if focused on patient-centered outcomes across multiple cancers. Our search identified many evidence-based guidelines, published meta-analyses and systematic reviews, and ongoing systematic reviews focused on individual types of cancer. However, our search only identified one systematic review,¹ which attempted to look at the diagnostic accuracy and clinical impact of PET and PET/CT used for surveillance of cancer recurrence across cancers. Although the review identified relevant evidence, the authors indicated that findings were limited by the lack of standard definitions for surveillance, heterogeneous scanning protocols, and inconsistencies in reporting test accuracy among the identified studies. No evidence-based guidelines or systematic reviews related to key questions 2 and 3 were identified.
- While a new systematic review could impact clinical practice, it may not be feasible. For Key Question 1, although our search of PubMed identified more than 100 clinical trials from the past five years and a similar search of ClinicalTrials.gov returned more than 60 potentially relevant open trials on the use of PET scans for surveillance for a range of cancer types, a closer examination of these studies found a limited number of studies and trials that also looked at clinical outcomes of interest such as progression-free survival and overall survival. A new systematic review addressing Key Question 2 and 3 is also not feasible. Our search did not identify any studies relevant to Key Questions 2 and 3.

References

1. Patel K, Hadar N, Lee J, Siegel BA, Hillner BE, Lau J. The lack of evidence for PET or PET/CT surveillance of patients with treated lymphoma, colorectal cancer, and head and neck cancer: a systematic review. *J Nucl Med*. 2013 Sep;54(9):1518-27.