

AbstractID: 9201 Title: A Systematic Analysis of the External Beam Radiotherapy Process for Patient Safety

Purpose: We have applied failure mode and event analysis (FMEA) to review our external beam radiation therapy (EBRT) process with the intent of identifying possible failure modes and increasing the overall safety of the EBRT process. **Method and Materials:** Our review was initiated in December 2006 and included 12 members of the staff assisted by experts from Center for Innovation in Quality Patient Care (CIQPC) at our institution. Meeting weekly, the task group developed a visual map of the EBRT process, completed March, 2007. The group then performed a FMEA to identify those nodes or steps in the process that were most likely to exhibit a failure mode that would potentially harm a patient. Each failure mode was given a rank priority number (RPN) based upon tabulated survey scores for the severity, frequency, and detectability of that failure. **Results:** We considered the top 15 failure modes with RPN scores between 75 and 160. The group then brainstormed solutions for the failure modes using accepted mistake-proofing methods. Each solution was then scored for effectiveness (1 to 10) and feasibility (1 to 10). Solutions with both effectiveness and feasibility greater than 5 (27 total solutions) were considered for implementation into the clinic. We continue to evaluate the impact and effectiveness of these process modifications. **Conclusion:** FMEA is a widely-used tool for improving safety and reliability and can be easily adapted for use in radiation oncology.