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Clinical Decision Support (CDS) Implementation Decreases Reimbursement Denials for Lower Extremity Duplex Ultrasound Exams

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History of Appropriate Use Criteria (AUC) and Clinical Decision Support (CDS)

- Rising healthcare expenditure in the 1980's prompted a focus on healthcare reform in the early 1990's.
- Former ACR BOC Chair, K. K. Wallace, Jr., MD pledges that the ACR would take on the responsibility of defining cost-effective utilization of radiological services.
- In 1993 the ACR Task Force on Appropriateness Criteria is created with the goal to develop nationally accepted, scientifically developed guidelines to assist both radiologists and referring clinicians order appropriate imaging studies.
- By the early 2000's, a broad set of AUC guidelines had been created by the ACR task force, though guidelines were only available in printed format and limited in practical use.
- Despite AUC development, disproportionate increases in high-tech diagnostic imaging (HTDI) (CT, MRI, etc.) continued throughout the early 2000's
- In 2013, the Institute for Clinical Systems Improvement white-paper on decision support and its effect on HTDI utilization demonstrated the effectiveness of CDS tools on a large sample size.

History of Appropriate Use Criteria (AUC) and Clinical Decision Support (CDS)

- In 2014, the Protecting Access of Medicare Act (PAMA) required the use of AUC by referring physicians for HTDI.
- By 2015, the Medicare Access and CHIP Reauthorization Act (MACRA) created the Quality Payment Program and thus the Merit-based Incentive Payment System (MIPS).
- Following the trial period these acts would mandate documentation of the use of CDS and AUC in order to receive Medicare reimbursement for imaging services. (The trial period has been extended multiple times with a current deadline of 12/31/2021).

- Despite AUC, we continued to see reimbursement denials for non-HTDI exams in our hospital system. For the purposes of this quality improvement initiative, focus was made on lower extremity duplex ultrasound exams.
- Although lower extremity duplex ultrasound is not considered HTDI, we proposed implementing a CDS mechanism at the point of exam ordering by the referring clinician.
- **Our goal was to decrease the rate of reimbursement denials by Centers for Medicare and Medicaid Services (CMS) due to inappropriate imaging utilization.**

- Total number and percentage of CMS reimbursement denials for lower extremity venous doppler ultrasound exams were derived over a six-month period both before (July-December 2019, FY2020) and after implementation of a CDS mechanism at the point of exam ordering by the referring provider(July-December 2020, FY2021).

- Reimbursement denials were further stratified into categories pertaining to reason for denial. Specifically, the denials which were related to clinician documentation/inappropriate utilization and those which were not.

- Relative frequencies of denials pertaining to documentation/inappropriate utilization (denials/1000 exams) were tabulated for the control and experimental groups, prior to and after CDS implementation, respectively, and a Chi-Square test was performed to assess for statistical significance.

CDS Mechanism

- A test CDS mechanism was embedded in our in network electronic medical record ordering system for lower extremity doppler ultrasound exams.
- The mechanism required the ordering provider to input a clinical indication for the exam that was recognized under appropriate use criteria.
- If the clinician failed to input an indication or used an indication that did not fall under appropriate use according to ACR appropriateness criteria (for example, “swelling”) the CDS mechanism would be activated and require the clinician to change the order.

Denial Category	Denial Reason	Total
Documentation Needed	CO-Claim, service lacks information which is needed for adjudication. At least one Remark Code must be provided	29
Documentation Needed	CO-The attachment, other documentation content received did not contain the content required to process this claim or service.	1
Medical Request Related	Missing patient medical record for this service.	2
Non Priority	CO-Claim, service lacks information which is needed for adjudication. At least one Remark Code must be provided	15
FY 2020 Total		**47**

Prior to CDS implementation, there were 588 total denials out of 3,870 lower extremity duplex ultrasound exams billed (15.2%).

Of those denials, **47** were related to clinician documentation and potentially amendable to CDS (**12.14 denials/1000 exams**).

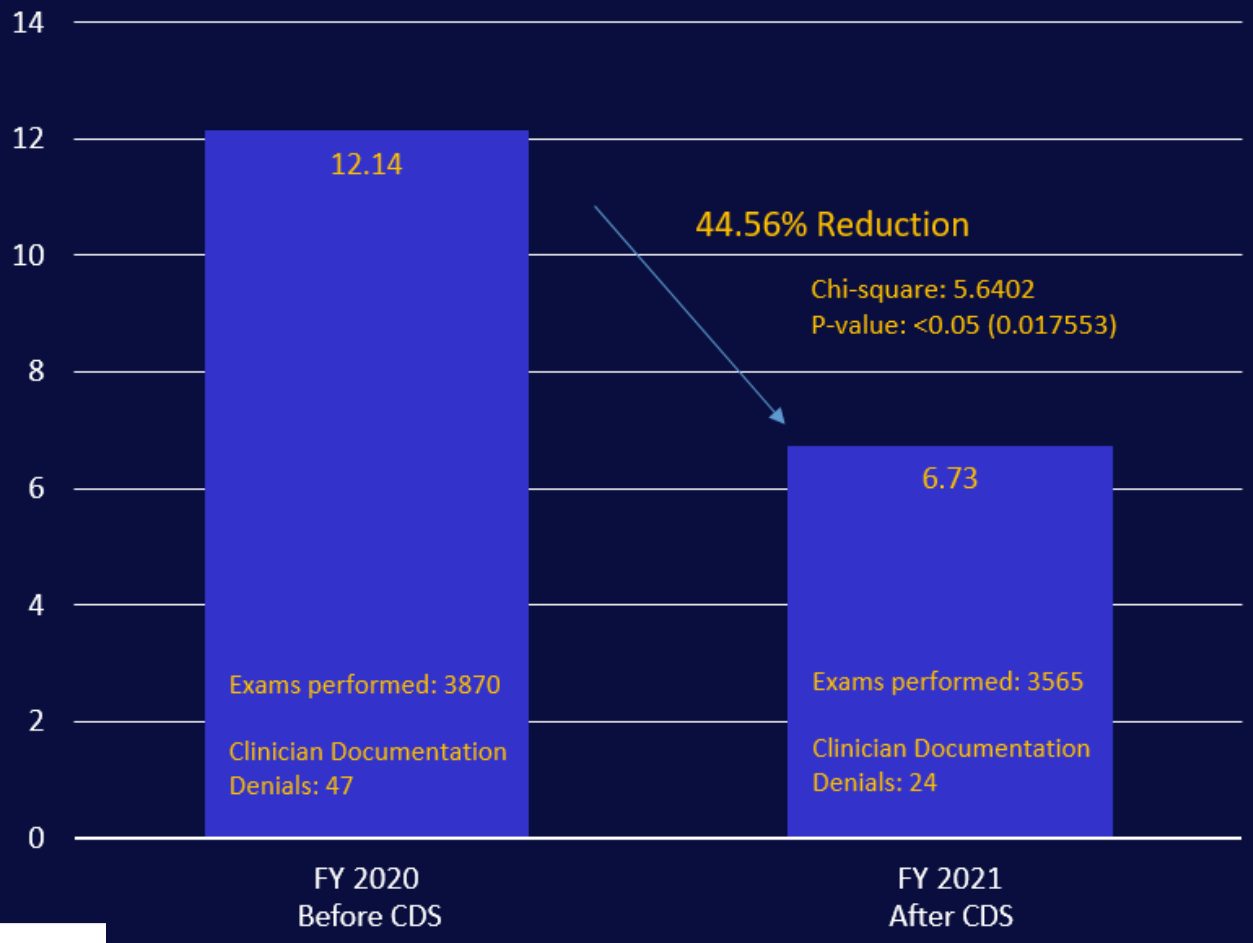
Denial Category	Denial Reason	Total
Documentation Needed	CO-Claim, service lacks information which is needed for adjudication. At least one Remark Code must be provided	7
Documentation Needed	PI-Claim, service lacks information which is needed for adjudication. At least one Remark Code must be provided (may be comprised of either the Remittance Advice Remark Code or NCPDP Reject Reason Code.)	5
Medical Request Related	Missing patient medical record for this service.	2
Non Priority	CO-Claim, service lacks information which is needed for adjudication. At least one Remark Code must be provided	10
FY 2021 Total		**24**

Following CDS implementation, there were 488 total denials out of 3,565 lower extremity duplex ultrasound exams billed (13.6%).

Of these denials, **24** were related to clinician documentation (**6.73 denials/1000 exams**).

Background | Purpose | Methodology | Results | Conclusion

Lower Extremity Duplex Ultrasound Claim Denials due to Documentation (per 1000 exams)



- CDS implementation nearly cut in half the rate of CMS reimbursement denials related to clinician documentation/inappropriate utilization for lower extremity duplex ultrasound.

- Likely generalizable to a broader range of imaging exams, these results strongly support that CDS mechanisms can change ordering habits of referring providers and improve appropriate utilization of imaging, thereby improving diagnostic accuracy and quality of care while reducing unnecessary testing for Medicare and Medicaid patients.

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