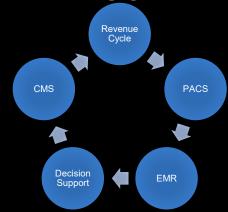
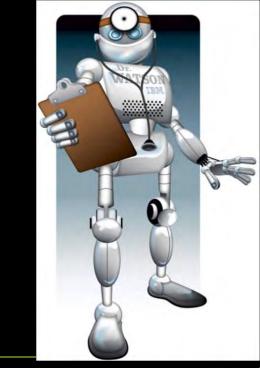
WISH LIST FROM SOFTWARE VENDORS FOR CT LUNG CANCER SCREENING

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Category	Category Descriptor	Category	Findings	Management	Probability of Malignancy	Estimated Population Prevalence
Incomplete		0	prior chest CT examination(s) being located for comparison	Additional lung cancer screening CT images and/or comparison to prior chest CT examinations is needed	in/a	1%
			part or all of lungs cannot be evaluated			
Negative	No nodules and definitely benign nodules	1	no lung nodules nodivle(s) with specific calcifications: complete, central, popcorn, concentric rines and fat containing nodules			
Benign Appearance or Behavior	Nodules with a very low likelihood of becoming a clinically active cancer due to size or lack of growth	2	Inder Gehalder); < Kome neur Cel nom Ser Cel nom Kom Tublik Gameter om bandina screening < Kom Tublik Gameter om bandina screening < Kom Tublik Gameter om Sameter screening 2 2 3 men Gel 2 3 men de screeninger of a stanky growing and and screeninger of a screening for 3 2 menth	Continue annual screening with LOCT in 32 months	*16	90%
Probably Benign	Probably benign finding(s) - short term follow up suggested; includes nodules with a low likelihood of becoming a clinically active cancer	3	suid of addrively. a 6 to c 6 mm at baseline OR new 6 mm to c 6 mm gart suid readhile() 2 6 mm total diameter with solid component c 6 mm OR new c 6 mm total diameter new c 6 mm total diameter new c 7 mm or baseline CT or new	6 menth LDCT	142%	354
Suspicious	Findings for which additional diagnositi testing and/of fissue sampling to recommended	44	Suid enduktyt): 24 Sin x 53m mit baselien OR gravitig x 1 mm OR new 5 Sin x 58m ger tulk conductyt): 25 Fem with suid component 26 mm to x 1 mm OR with a new ag powyle x 4 mm sold component Methodenetial andré	3 month LDCT: PET/ICT may be used when there is a 2 8 mm solid component	5-15%	2%
		48 4X	And model(g). 2.15 mol (g), and 2.8 mm and or proving, and 2.8 mm and exploration(g) with: a solid composition (2.8 mm (g)) a solid composition (2.8 mm (g)) company to 4 mm/(g) and any (g)), and (g)), and (g)) Company to 4 mm/(g) and (g)), and (g)), and (g)), and (g)) and (g)), and (g))), a	chest CT with or without contrast, PTP/CT and/or tissue sampling depending on the *probability of multipanary and comorbitities. PTT/CT may be used when there is a 1 8 mm salid comparent.	> 15%	2%
Other	Clinically Significant or Potentially Clinically Significant Findings (non June cancer)	5	moreasis the subproof or mangnuncy modifier - may add on to category 0-4 coding	As appropriate to the specific finding	n/a	10%
Prior Lung Cancer	Modifier for patients with a prior diagnosis of lang cancer who return to screening	c	modifier - may add on to category 0-4 coding		•	-



Patient Identification for Screening

- Search EMR for eligible patients
 - CMS Benefit eligibility criteria
 - Age 50-77 years
 - Asymptomatic with no signs or symptoms of lung cancer
 - Tobacco smoking history of at least 20 pack-years
 - Current smoker or one who has quit smoking within the last 15 years
- Consider retrospective AI application to previous CT studies
- Pull relevant patient information into ACR registry
 - DOB, actual pack year smoking history, whether signs/symptoms of lung cancer, NPI of ordering physician
- Use databases such as PLCO and NLST to identify patients with highest a priori risk to make screening more cost effective and higher yield
 - Pacific islanders with 6 fold greater risk of lung cancer than Hispanic patients
 - Other risk factors

NextGen EMR: John E	Dolves [06/26/2007 12:00 PM : "Master Im"]					
	r Tools Utilities Window Help	28				
	Main Office 🔹 Barclay, Joseph MD 🔹 💭 💆 👮 🙀 - 🔯					
	Patient: John Dokes Age: 47 DOB: 03/14/1960 Current Provider: Joseph Barclay MD Gender: Male Current Encounter: 05/26/2007					
H O M E Demographics Record Vital Signs Nurse Documentation Chart Summary View Results	* New patient Peasonies for visit Brick Visit Chronic Problem List Add new problem * Seatabistine patient cough F u Drone Problem Code * Speciality MM F u Production Code * Visit Type Once Visit F u F u F u	New Score				
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Social History Health Maintenance HPF / Problem List Review of Systems	Vield Vield Signs District Instruct Renger Add New Vield Signs Expand Vield Signs Code // Time Temp FTemp CBP Poder Phythm Reservation H.tm.					
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EMR/HIS Ordering Template for Initial and Subsequent Annual LDCT lung cancer Screenings and Documentation in Beneficiary Medical Records

- Date of birth
- Actual pack year smoking history (number)
- Current smoking status
 - For former smokers number of years since quitting
- Statement that beneficiary is without signs/symptoms of lung cancer
- National Provider Identifier of the ordering practitioner

CT Image Acquisition

- Optimize texture by using Deep Learning reconstruction rather than IR
- Consider reconstruction at higher matrix sizes, at least for clinical decision support

Access to Software



Need to have flexibility to access AI software both locally and in the cloud

Integration

- Needs to be integrated with PACS or reporting workflow process
- Server onsite or in cloud should take all relevant CT studies and automatically do pre-processing as part of routine workflow

Functionality



- Software can take CT and find lung nodules but only small part of the total screening process
- Would like to get reason or level of certainty and benign vs. malignant
- Software should be interactive to allow agreement or lack of agreement
- Software should be based on similar patient population for identification of lung nodules which might depend on prevalence of disease, e.g. VA different from UMMS or Southwest
 - Continuous learning e.g. Berkman Sahiner FDA lecture

Functionality

- Second and third opinions have been shown to increase accuracy
 - Should have support for ensembles of AI programs that might do the same thing or might do complementary things
- Track change over time and identify progressive but very slow change and identify rapid change even if nodules are small
- Automatic software to follow up to determine whether recommendations have been followed by clinicians for additional studies and procedures and communication with patients or primary care providers
- Automatic ACR registry reporting

Conclusion

- IT is becoming increasingly critical to the success of today's practice of radiology and is especially critical as we move to implement the complex process that is associated with Lung Cancer Screening
- Clinical decision support tools are evolving from the current state of the art to next generation and beyond systems that will allow us to take care of patients
- This will allow us to maximize the likelihood that our CT screening studies will save lives and reduce morbidity associated with lung cancer