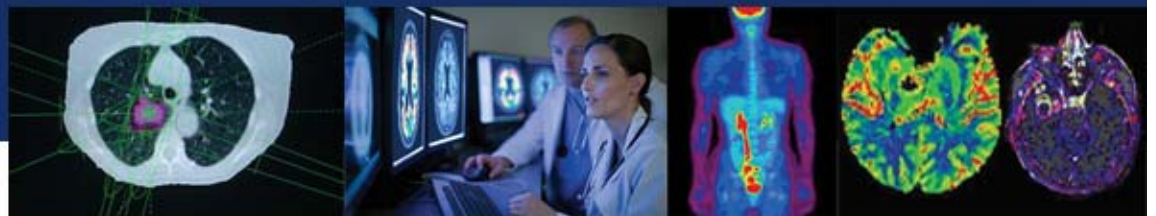


# The Imaging and Radiation Oncology Core (IROC) Houston QA Center's International Activities Outside North America



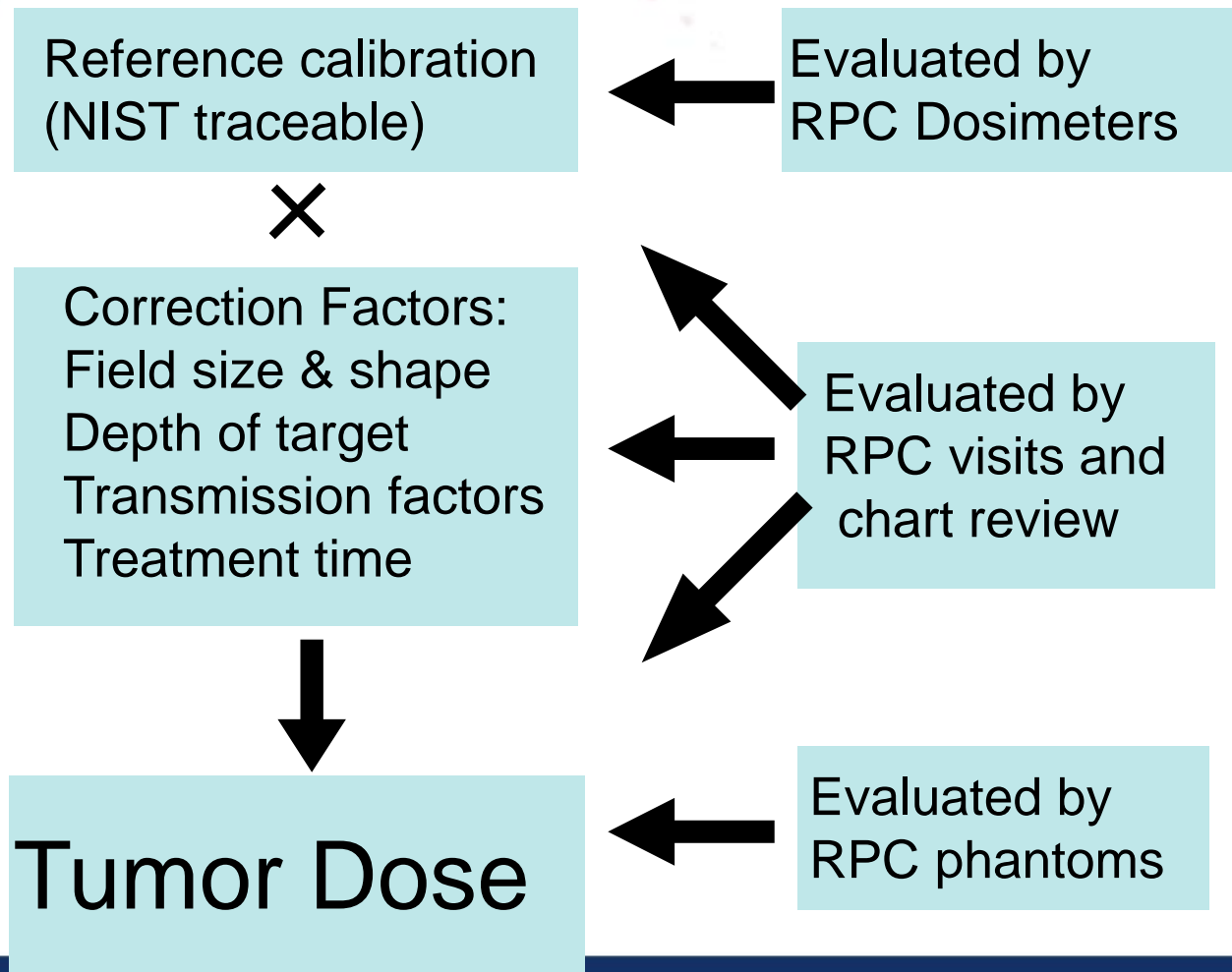
David Followill  
AAPM Summer Meeting  
Anaheim, CA  
July 14, 2015

# IROC Houston's Mission

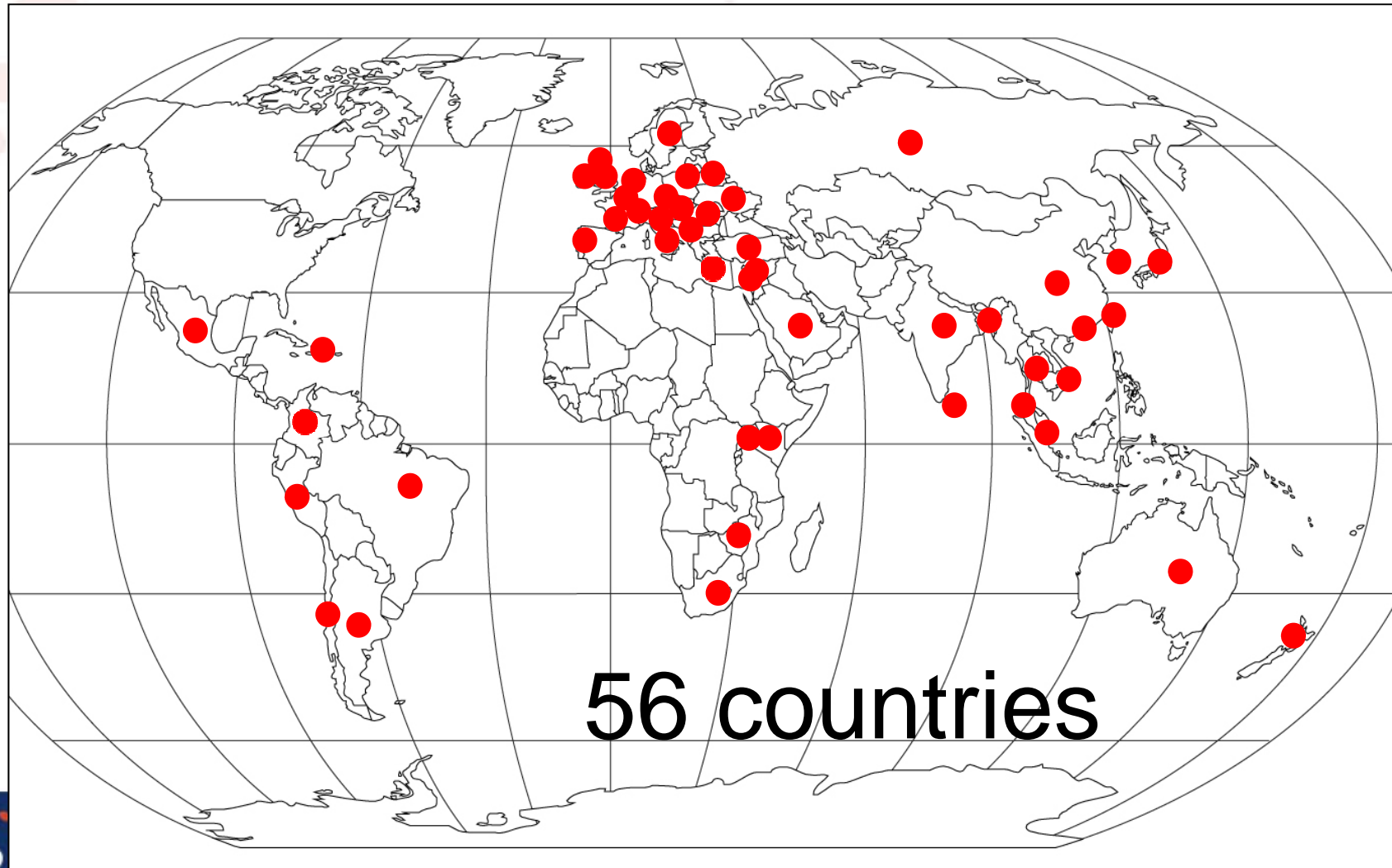
Provide integrated radiation oncology and diagnostic imaging quality control programs in support of the NCI's NCTN Network thereby assuring high quality data for clinical trials designed to improve the clinical outcomes for cancer patients

**worldwide**

# IROC Houston Verification of Institutions' Delivery of Tumor Dose



# Countries and sites Monitored

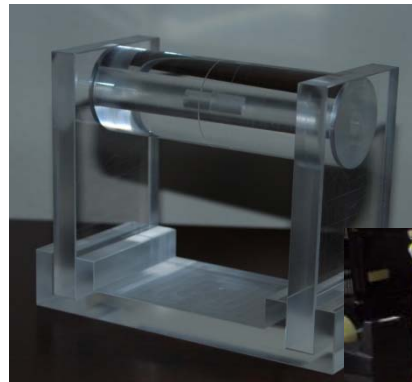
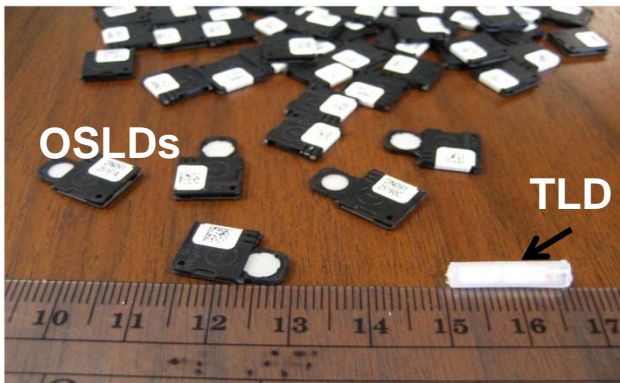


# QA Program Components (since 2013)

1. Remote audits of machine output  
376 (1,678) institutions, **2,778 (29,284)** beams  
measured with TLD/OSLD Internationally (**N America**)
2. Patient Treatment record reviews  
**216 (3,008)** charts reviewed
3. Credentialing – Phantoms (IMRT H&N)  
**87 (477)** Phantom irradiations

# Remote Audits of Machine Output

- Verification of Reference Calibration for photon, proton and electron beams
- Units of special design (Gamma Knife, CyberKnife, Tomotherapy)



# Beam Output Monitoring

Geographical Region	Beam Output Audits (IROC/INST)			
	Sample count	Mean	Std Deviation	P value ( $\alpha=0.05$ )
<b>N America</b>	<b>29284</b>	<b>0.999</b>	<b>0.019</b>	<b>control</b>
Australia/New Zealand	544	0.989	0.018	0.000
China/ Hong Kong	187	1.002	0.017	0.053*
Republic of Korea	397	0.997	0.022	0.013
Japan	84	0.991	0.017	0.000
Taiwan	95	0.993	<b>0.029</b>	0.002
E Europe/ Russia	104	1.005	<b>0.038</b>	0.002
W Europe	657	1.000	<b>0.029</b>	0.914*
India/ Sri Lanka	71	1.009	<b>0.042</b>	0.000
Middle East	268	0.995	0.022	0.000
Africa	48	1.006	0.024	0.011
Latin America	37	1.003	0.023	0.272*
SE Asia	104	0.992	0.023	0.000

\* not significantly different from N America (one way ANOVA)

# Patient Chart Review

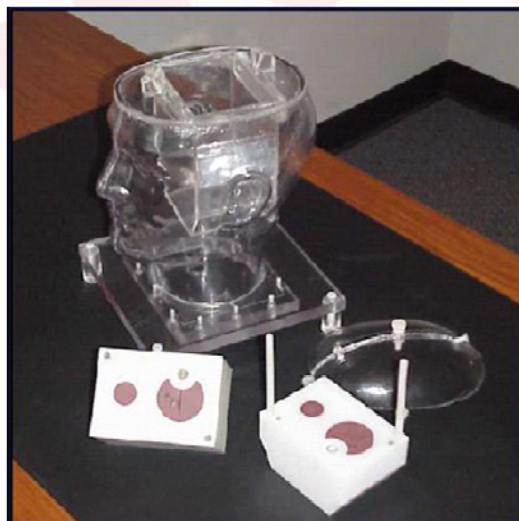
	RT Patient Chart Reviews		
Location	Total dose points reviewed	# dose points within criteria	Percent passing
N America	3008	2748	86.4%
International	216	200	92.6%

The chart review results between N America and all other international sites since 2012.

Majority of these reviews were for brachytherapy treatments. No statistical difference between N America and International pass rates.



# IMRT H&N Phantom Results



	IMRT H&N Phantom		
Location	# irradiated	# passed	Percent passed
North America	477	420	88.1%
International	87*	76	87.4%

**\*RT sites in 30 countries**

**IMRT H&N phantom irradiation pass rate since 2012**

# Summary

- IROC Houston is no longer just domestic as trials go international
- Still work to be done with machine calibration
- Phantoms continue to provide advanced technology E2E monitoring

Thank You  
Questions?

