

RTOG 0848 / EORTC 40084-22084 QART program

Sub-study on extent and frequency of ERDA

Coen Hurkmans

clinical physicist

EORTC Radiation Oncology Group

Executive Committee member

QART committee member

Akos Gulyban

medical physicist

RTQA manager

EORTC Headquarters

ATC / RTOG Meeting

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- **Level 1 (minimal requirement, included in all levels)**
 - **EORTC Facility Questionnaire and External Reference Dosimetry Audit**
- **Level 2**
 - **Dummy Run / Dry Run exercise and validation**
- **Level 3**
 - **Limited Individual Case Review (~20% of treated patients)**
- **Level 4**
 - **Extended Individual Case Review (majority or all randomized patients)**
- **Level 5 (prior to use of IMRT)**
 - **Complex dosimetry check (phantom study)**

1. valid EORTC FQ –by EORTC

- ✓ Not older than 2 years
- ✓ Validated (= meet the EORTC ROG minimum requirements)

2. Baseline ERDA through RPC (year 0)

- ✓ US standard: all machines + all photon beams

3. Dry Run through the ATC/ITC system

- ✓ Digital Data Integrity QA – by ITC
- ✓ Protocol specific QA – by US+EORTC reviewer

1. Submission of all cases (who receive RT) to the ATC/ITC system

- ✓ **Digital Data Integrity QA – by ITC**
- ✓ **Protocol specific QA – by US+EORTC reviewer**

2. IMRT phantom credentialing through RPC

- ✓ **EORTC sites can apply for IMRT credentialing**
 - ? **Financial support is not clarified**
 - ? **Decision of which center / under what condition can apply**

EORTC standard (minimum)

Frequency:

In every two years

Extent:

One treatment unit

Lowest and highest photon energies

US (RPC) standard

Frequency:

In every year

Extent:

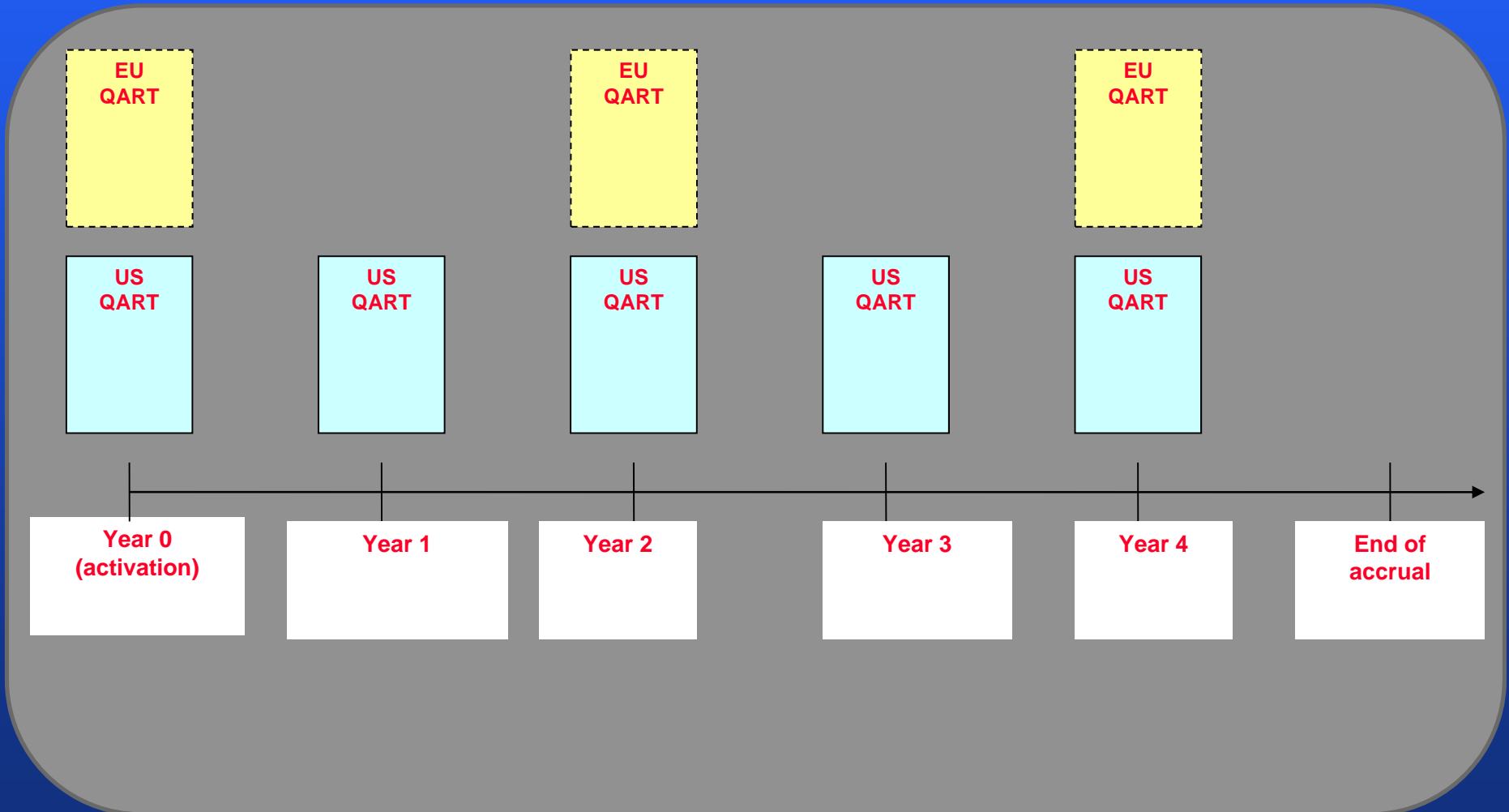
All treatment units

All photon beams

Subjective differences

- 1. No physicist is allowed to calibrate alone**

Measurements



Hypothesis 1. Site failure

Time $i > 0$		US-ERDA evaluation	
$N_i = A_i + B_i + D_i$			
centers tested		Pass	Fails
EU-ERDA	Pass	A_i	B_i
Evaluation	Fails	0 (by construction)	D_i

1. $D_i + B_i$ must be $<$ US experience (12%) for $i=1,2,3,4$

2. $B_i < ?$ (other criteria)

Hypothesis 2. One vs. All treatment units

**Correlation between the failure rate of the
most recent machine and the other machines**



high correlation

Hypothesis 3. 1y vs. 2ys ERDA frequency

Failures at intermediate years are $<12\%$

+

Yearly failure rate $< 12\%$



Hypothesis: +33% follow-up (failure) if every 2ys

Hypothesis 4. Correlations between site characteristics and ERDA failure

Number of

- **Physicists / machine**
- **Physicist / site**
- **Physicist / patient (per year)**
- **Patients / machine**
- **Etc..**