
# UPDATE *"Give me five"*: report preliminare di uno schema marcatamente ipofrazionato di radioterapia per la cura del carcinoma prostatico mediante IG-IMRT (BrainLab-VERO e RapidArc-Varian) Esperienza dell'Istituto Europeo di Oncologia su 166 pazienti

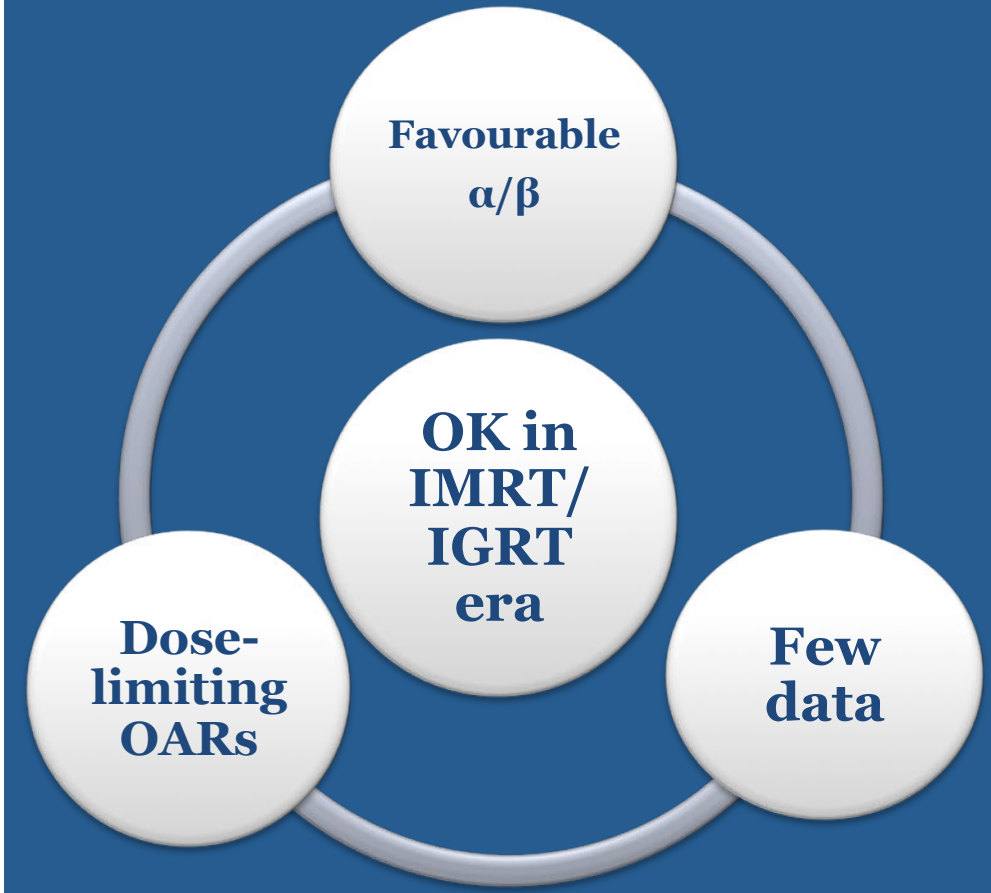
**Authors:** S.P. Colangione[1], B.A. Jereczek-Fossa[1,2], C. Fodor[1], D. Zerini[1], A. Cecconi[1], S. Vigorito[3], R. Luraschi[3], S. Comi[3], F. Cattani[3], R. Cambria[3], C. Garibaldi[3], R. Orecchia[1,2,4]
**Presenting:** G. Timon[1]

1. Divisione di Radioterapia, IEO – Istituto Europeo di Oncologia, Milano
2. Università degli Studi di Milano
3. Divisione di Fisica Medica, IEO – Istituto Europeo di Oncologia, Milano
4. Centro Nazionale di Adroterapia Oncologica (CNAO), Pavia

# Prostate hypofractionation

UNIVERSITÀ DEGLI STUDI DI MILANO

IEO Istituto Europeo di Oncologia




| PRO | CONS |
|---|---|
| Biologically effective | Requires IGRT+IMRT |
| Centre-friendly | Short follow-up |
| Patient-friendly | |

# Previous experiences

UNIVERSITÀ DEGLI STUDI DI MILANO

IEO Istituto Europeo di Oncologia

Radiotherapy and Oncology 109 (2013) 217–221

Contents lists available at ScienceDirect

Radiotherapy and Oncology

journal homepage: www.thegreenjournal.com

**11% HR**

Phase II trial

## Stereotactic body radiotherapy for localized prostate cancer: Pooled analysis from a multi-institutional consortium of prospective phase II trials☆☆

Christopher R. King[a,*], Debra Freeman[b], Irving Kaplan[c], Donald Fuller[d], Giampaolo Bolzicco[e], Sean Collins[f], Robert Meier[g], Jason Wang[a], Patrick Kupelian[a], Michael Steinberg[a], Alan Katz[h]

[a] Department of Radiation Oncology, UCLA, Los Angeles, CA; [b] Naples Radiation Oncology, Naples, Florida; [c] Department of Radiation Oncology, Beth Israel Deaconness, Boston, MA; [d] Radiosurgery Medical Group, San Diego, CA, United States; [e] Division of Radiation Oncology, San Bortolo Hospital, Vicenza, Italy; [f] Department of Radiation Oncology, Georgetown University, Washington DC; [g] Department of Radiation Oncology, Swedish Medical Center, Seattle, WA; and [h] Flushing Radiation Oncology, Flushing, NY, United States

| | | | | | |
|---|---|---|---|---|---|
| King 2013 | 1100 | 35-40/4-5 | 36 mo | bRFS 93% (78-95) | NR |
| Chen 2013 | 100 | 35-36,25/5 | 2 ys | bRFS 99% | NO G3+ |
| Katz 2013 | 304 | 35-36,25/5 | 6 ys | bRFS 74-97% | 2% late G3 GU |
| Timmerman 2014 | 91 | 45-47,5-50/5 | 42 mo | PSA CR 99% | 6,6% G3+ rect |
| Detti 2015 | 32 | 35-36,25/5 | 2 ys | PSA CR 91% | 2 acute G3 GU |
| D'Agostino 2015 | 73 | 35/5 | 18 mo | PSA CR 100% | NO G3+ |

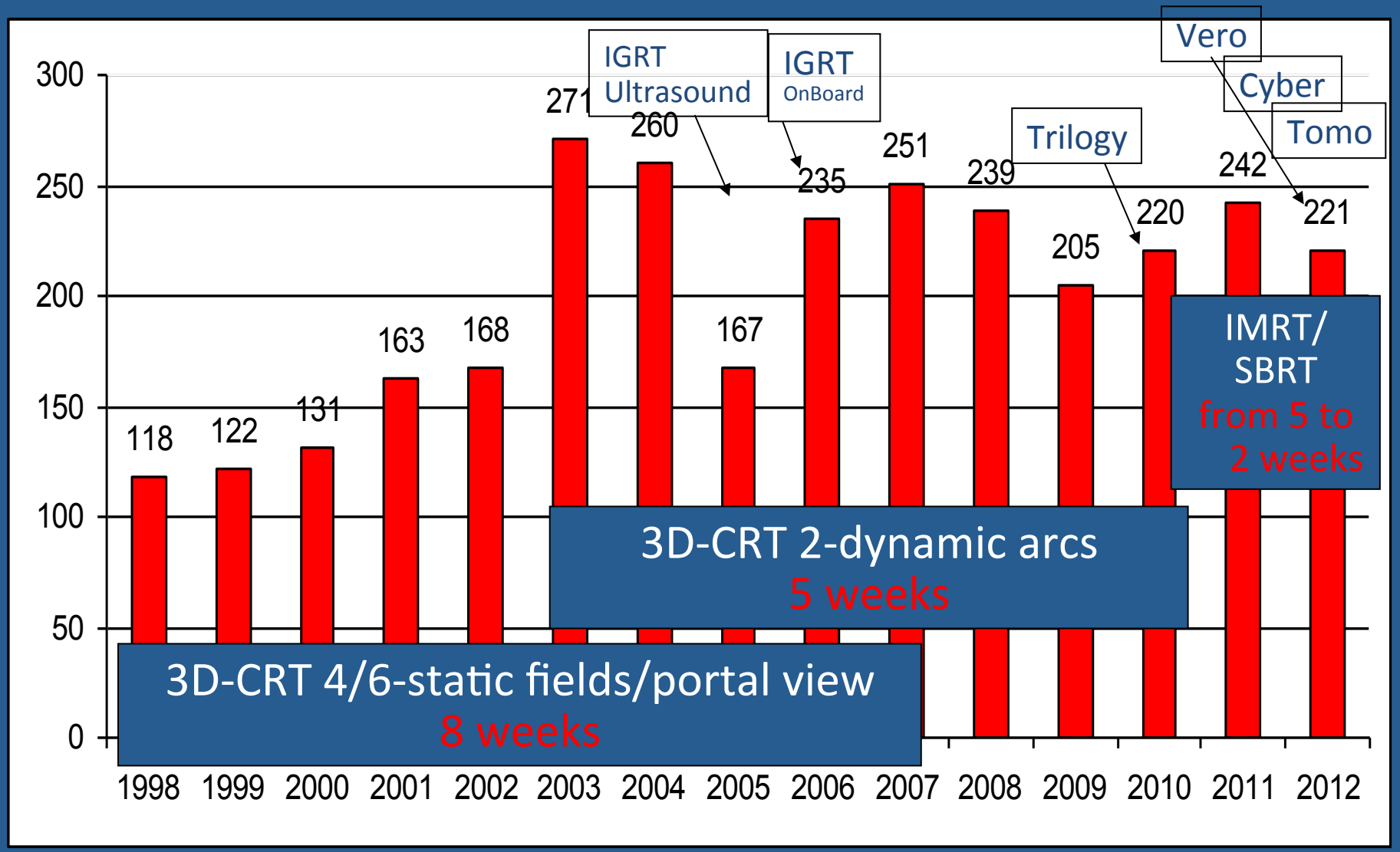
Waiting for...

PACE trial

# Prostate RT at IEO

UNIVERSITÀ DEGLI STUDI DI MILANO

IEO Istituto Europeo di Oncologia



UNIVERSITÀ DEGLI STUDI DI MILANO

IEO Istituto Europeo di Oncologia

# "GIVE ME FIVE"

To assess feasibility and safety, in terms of early and late toxicity, of a short course radiotherapy for prostate-confined tumor through IG-IMRT with non robotic linear accelerators.

Secondary endpoint: biochemical control.

[April 2012 – May 2015]

| Volume | Dose/fr | N fr | Dtot | NTD ($\alpha/\beta$=1,5Gy) d/fr 2Gy | B E D ( $\alpha$ / $\beta$=1,5Gy) |
|---|---|---|---|---|---|
| PTVprostate | 6,5 | 5 | 32,5 | 74,3 | 173 |
| | 7 | 5 | 35 | 85 | 198 |

# Patients' selection

UNIVERSITÀ DEGLI STUDI DI MILANO

IEO Istituto Europeo di Oncologia

INCLUSION CRITERIA:

- 18-90 y.o.
- Histologically proven Adenocarcinoma
- No previous pelvic surgery (except TURP) or radiotherapy
- Eventually neoadjuvant/concomitant ADT
- Specific written consent signed

EXCLUSION CRITERIA:

- cT3/T4 or cN1 or cM1
- Prostate volume >100 cc
- Severe urinary obstructive symptoms
- Severe systemic disorders, including chronic urinary or intestinal inflammatory
- Psychiatric disorders or other condition
- Non conformity to the dose constraints

UNIVERSITÀ DEGLI STUDI DI MILANO

IEO Istituto Europeo di Oncologia

# Supportive measures

- **PREMEDICATION** with low dose steroids + IPP before each treatment
- **URINARY:** symptomatic urinary are allowed (e.g. alpha-blockers like tamsulosin, silodosin)
- **BLADDER:** urinary bladder both during simulation and treatment
- **BOWEL:** low gas and low motility diet. One enema will be administered 2-3 hours before CT simulation and each treatment

UNIVERSITÀ DEGLI STUDI DI MILANO

IEO Istituto Europeo di Oncologia

# Patients' characteristics

166 patients

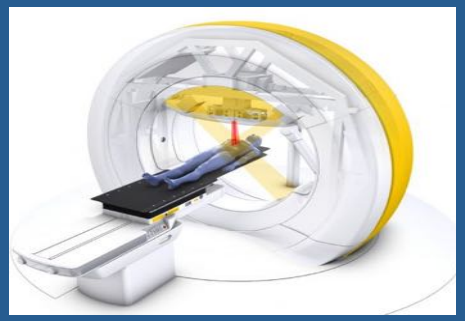
| | | |
|---|---|---|
| **NCCN risk category** | **Low** | 58 (35%) |
| | **Intermediate** | 83 (50%) |
| | **High** | 24 (14,5%) |
| | **Unknown** | 1 (0,5%) |
| **Age (years)** | **Median** | 74,3 |
| | **Range** | 51.4 – 89 |
| **iPSA (ng/ml)** | **Median** | 7,1 |
| | **Range** | 1.2 - 55.7 |
| **Gleason Score** | **Median** | 6 |
| | **Range** | 4 - 9 |
| **ADT** | **N pts** | 54 (32,5%) |

UNIVERSITÀ DEGLI STUDI DI MILANO

IEO Istituto Europeo di Oncologia

# Treatment delivery

| Volume | Dose/fr | N fr | Dtot | NTD (α/β=1,5Gy) d/fr 2Gy | B E D ( α / β=1,5Gy) |
|---|---|---|---|---|---|
| PTVprostate | 6,5<br>7 | 5<br>5 | 32,5<br>35 | 74,3<br>85 | 173<br>198 |



**IMRT + IGRT**

BrainLab System VERO

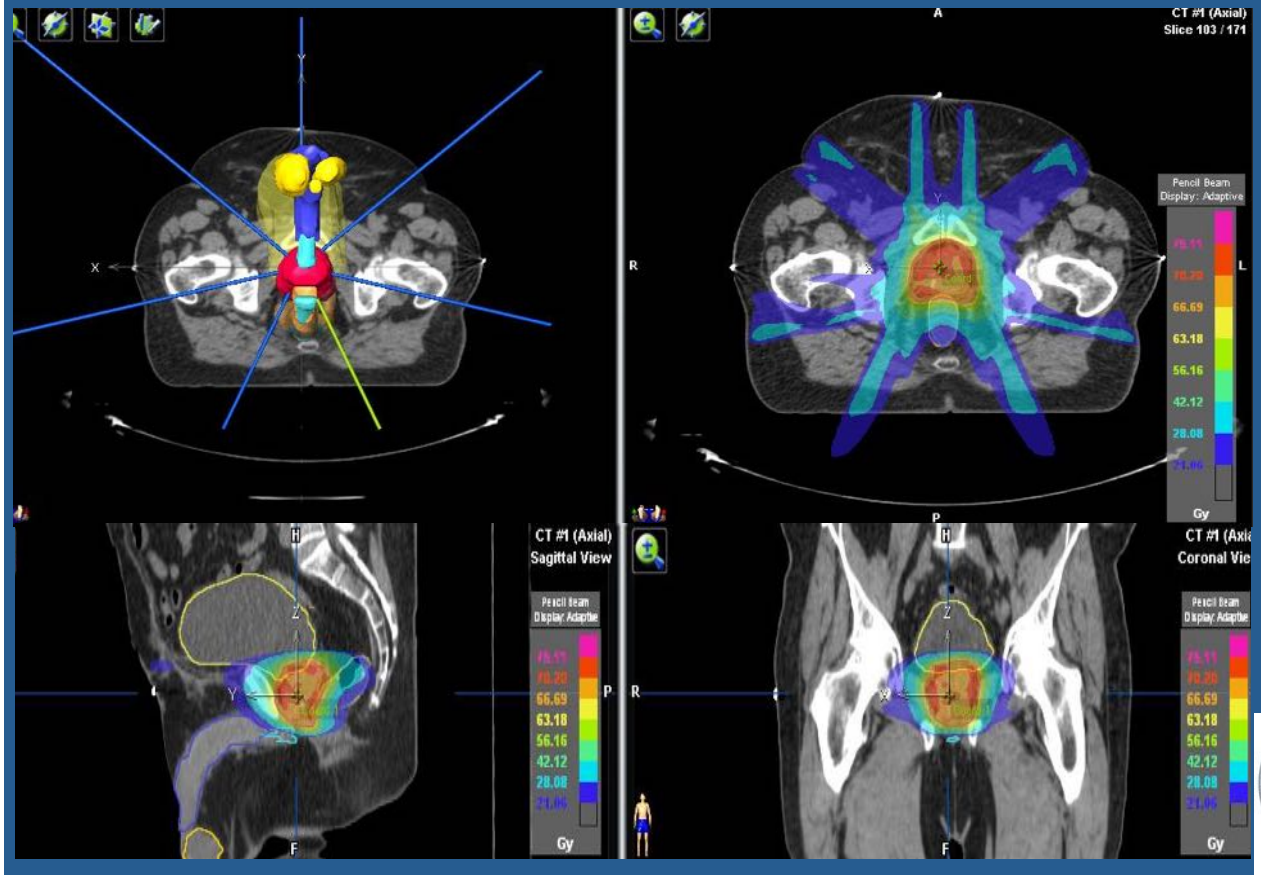
RapidArc Varian

Daily CBCT imaging

# Planning

PTVp = CTVp + 5/3 mm (post)
PTVsv = CTVsv + 5/3 mm (post)

| | Valori raccomandati per dose/frazione |
|---|---|
| Retto*<br>V= _____ $cm^3$ | $V_{50\%}$ <50% |
| | $V_{80\%}$< 20% |
| | $V_{90\%}$< 10% |
| | $V_{100\%}$< 5% |
| Volume di sovrapposizione PTV – retto | $D_{max}$ <85% |
| Parete post. retto/canale anale§§ | $D_{max}$<45% |
| Canale anale§ | $D_{mean}$<15Gy |
| Vescica urinaria*<br>V= _____ $cm^3$ | $V_{100\%}$ <10% |
| | $V_{50\%}$< 40% |
| | $V_{100\%}$< 5$cm^3$ |




VERO: 7 beams, X-6MV, IMRT

TRILOGY: 2 modulated arcs

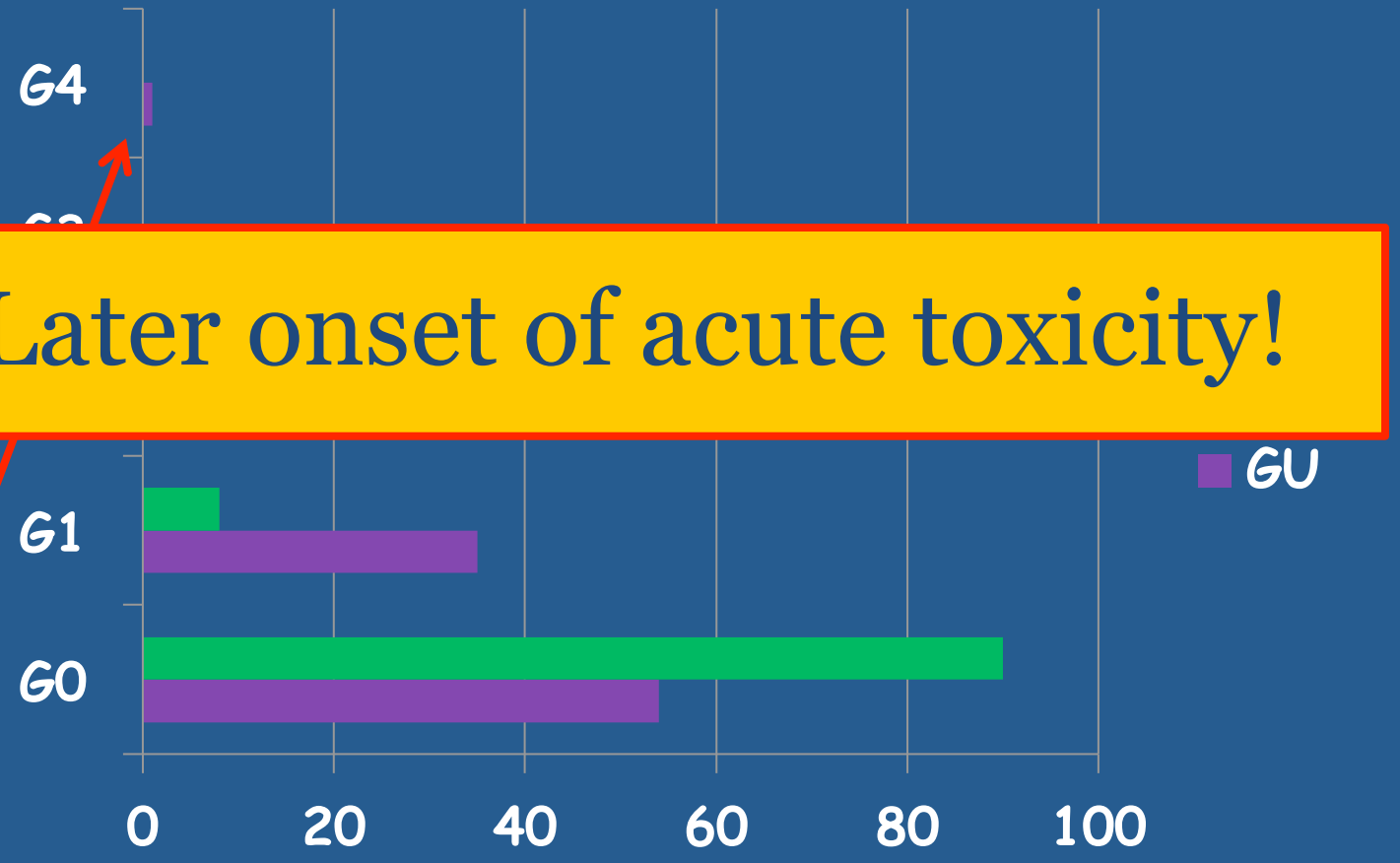
UNIVERSITÀ DEGLI STUDI DI MILANO

IEO Istituto Europeo di Oncologia

# Acute toxicity
(according to RTOG scale)

UNIVERSITÀ DEGLI STUDI DI MILANO

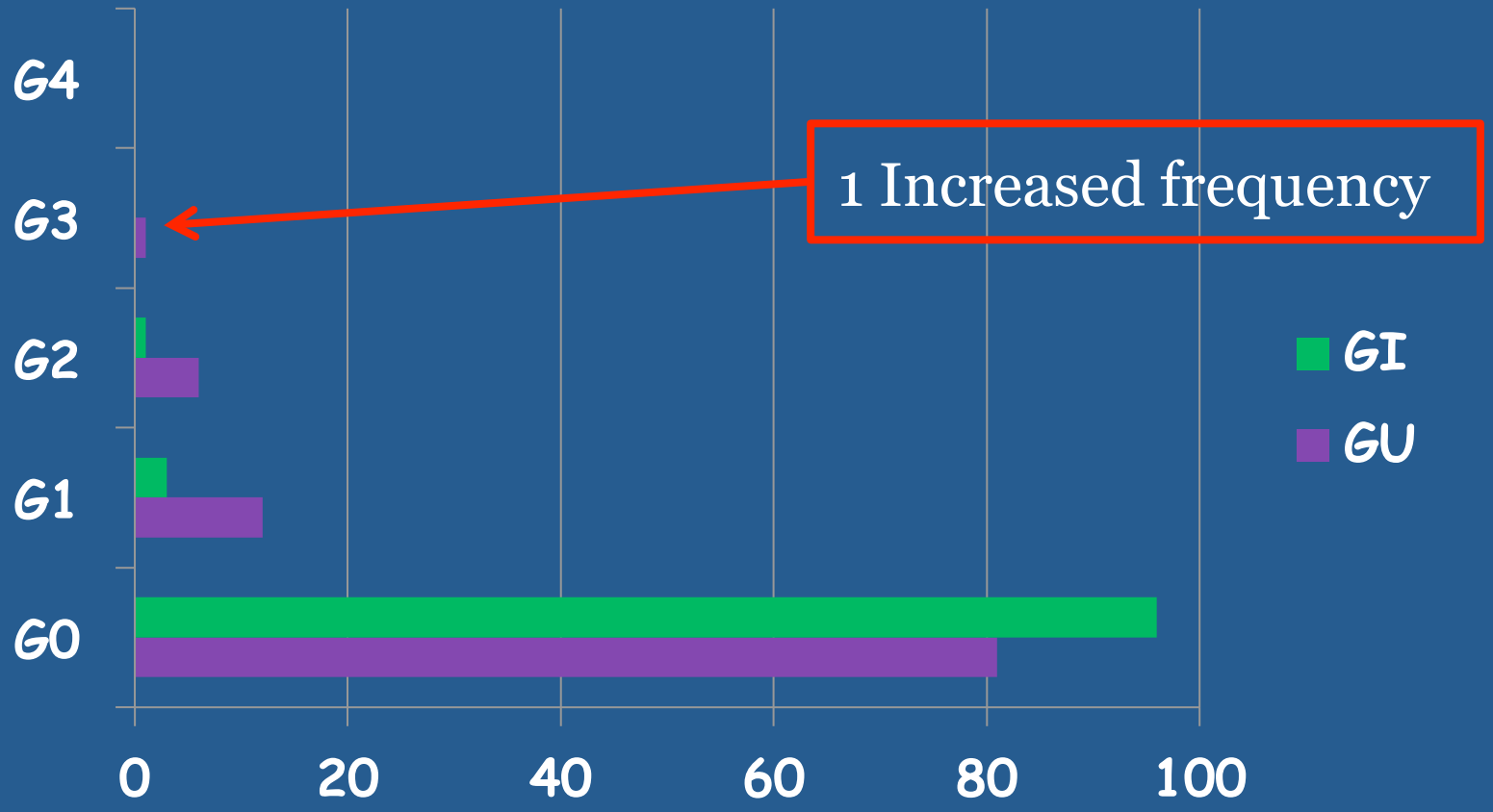
IEO Istituto Europeo di Oncologia




Later onset of acute toxicity!

1 Acute urinary retention

# Late toxicity
## (according to RTOG/EORTC scale)

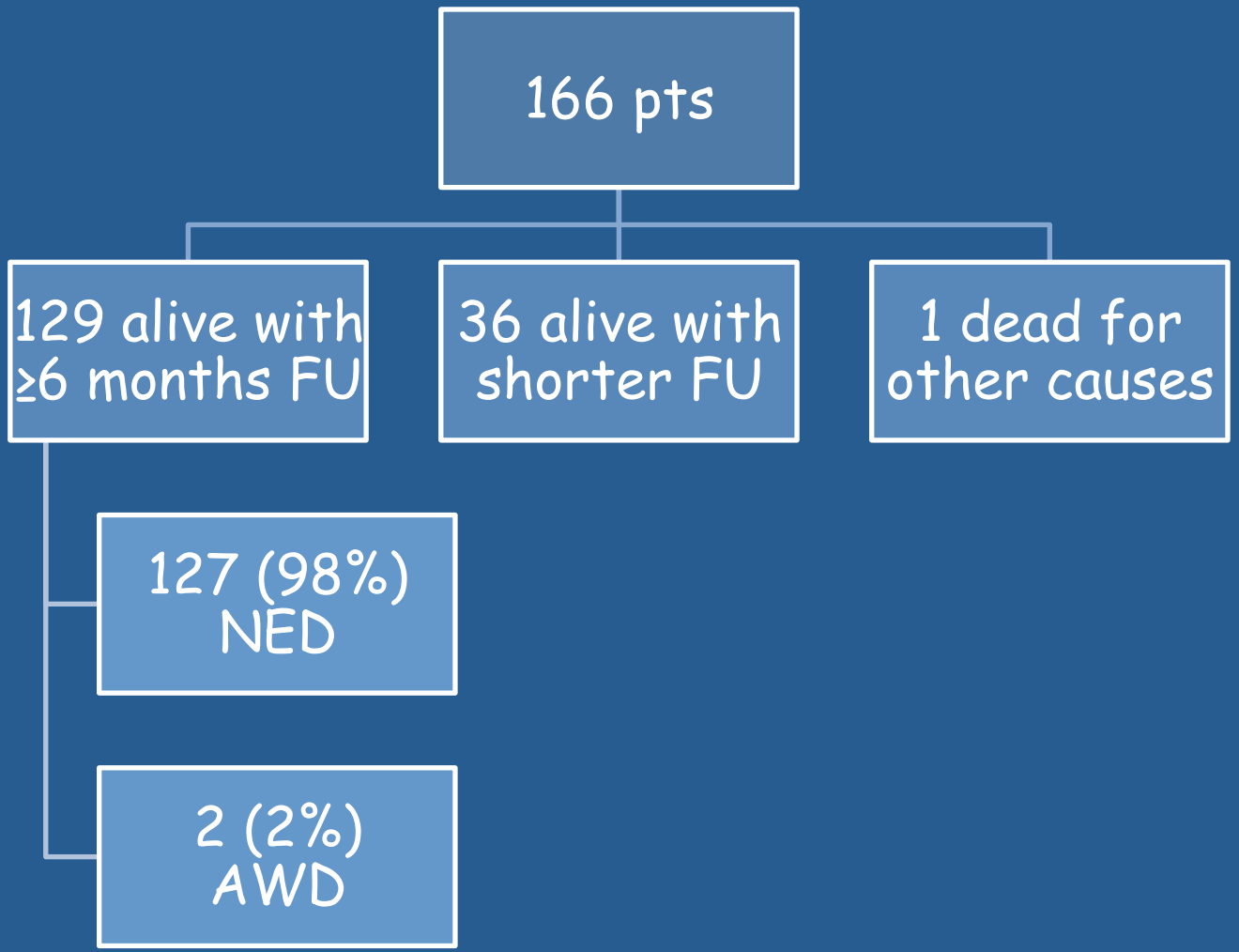



129/166 considered with
median follow-up 12.5 months (6 - 32.7)

UNIVERSITÀ DEGLI STUDI DI MILANO

IEO Istituto Europeo di Oncologia

# Efficacy - Biochemical response



UNIVERSITÀ DEGLI STUDI DI MILANO

IEO Istituto Europeo di Oncologia

# Conclusions

- Good patients' compliance and satisfaction
- Reasonable planning time
- Shortening of waiting list
- Good toxicity profile
- Encouraging efficacy results

BUT

Longer follow-up is mandatory!

# Ongoing…

UNIVERSITÀ DEGLI STUDI DI MILANO

IEO Istituto Europeo di Oncologia

**AIRC-1 (NCT01913717)**

Phase II prospective, single-arm, monocentric clinical trial (65 pts)

IMRT+IGRT (RapidArc – 2 modulated arcs)

**Prostate: 36,25 Gy/5 fr**

**DIL: 37,5 Gy/5 fr**

(multiparametric MR-guided)

- AIRC -

Associazione Italiana per la Ricerca sul Cancro

Investigator Grant - IG 2012

# Thank you for your attention!