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A Study on Healthcare Worker Screening with IFN-gamma Assays in Japan

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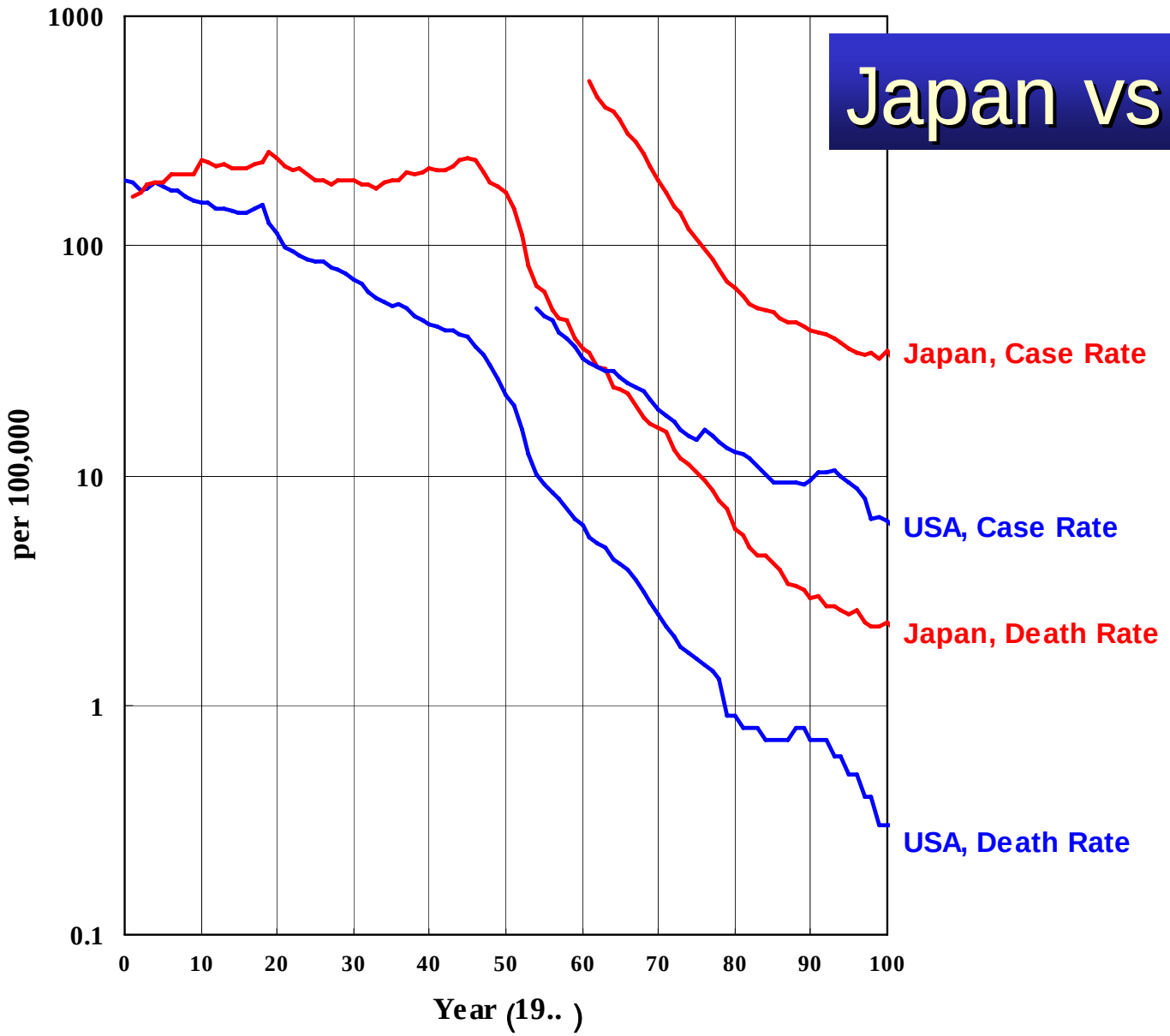
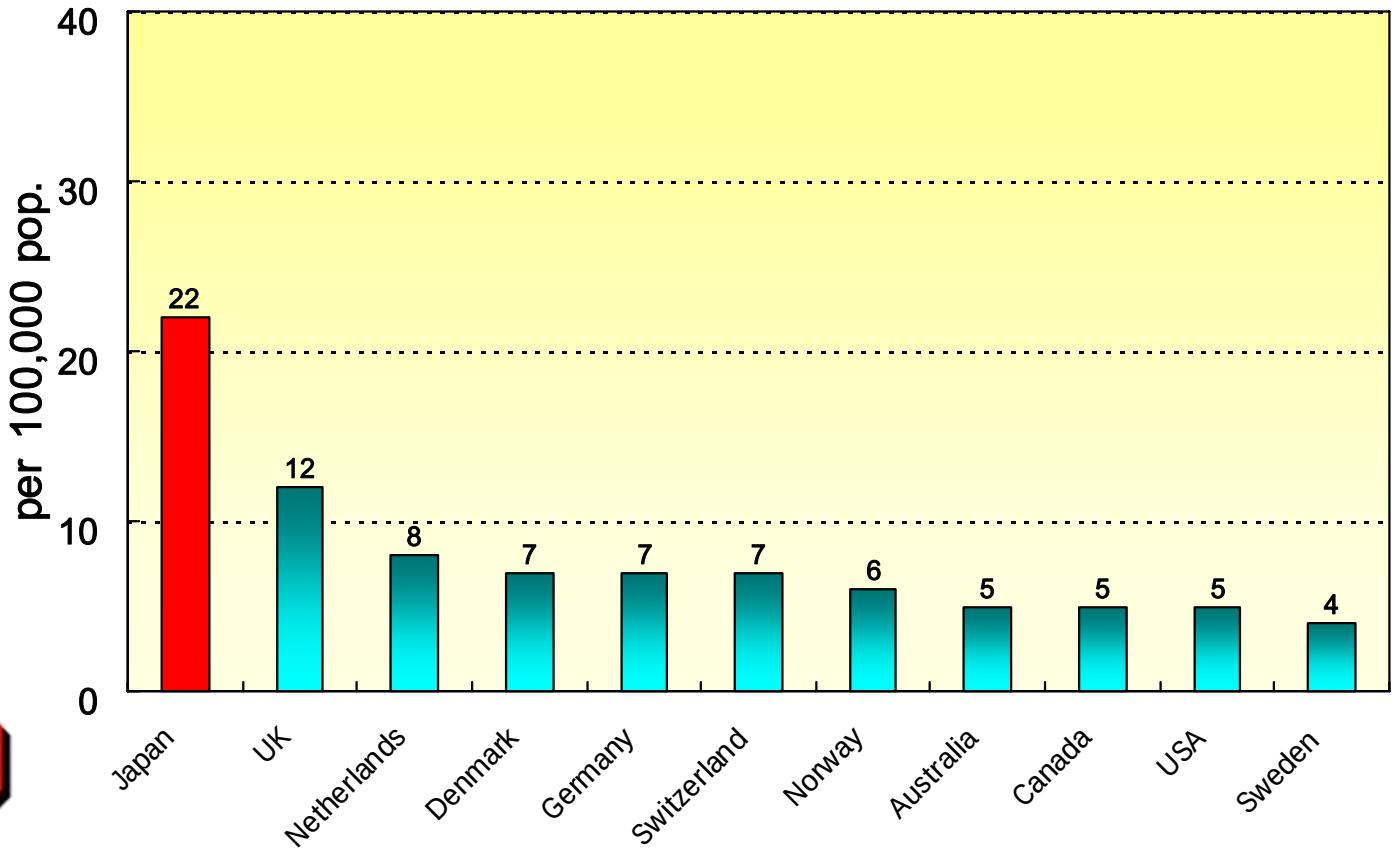
Japan vs USA

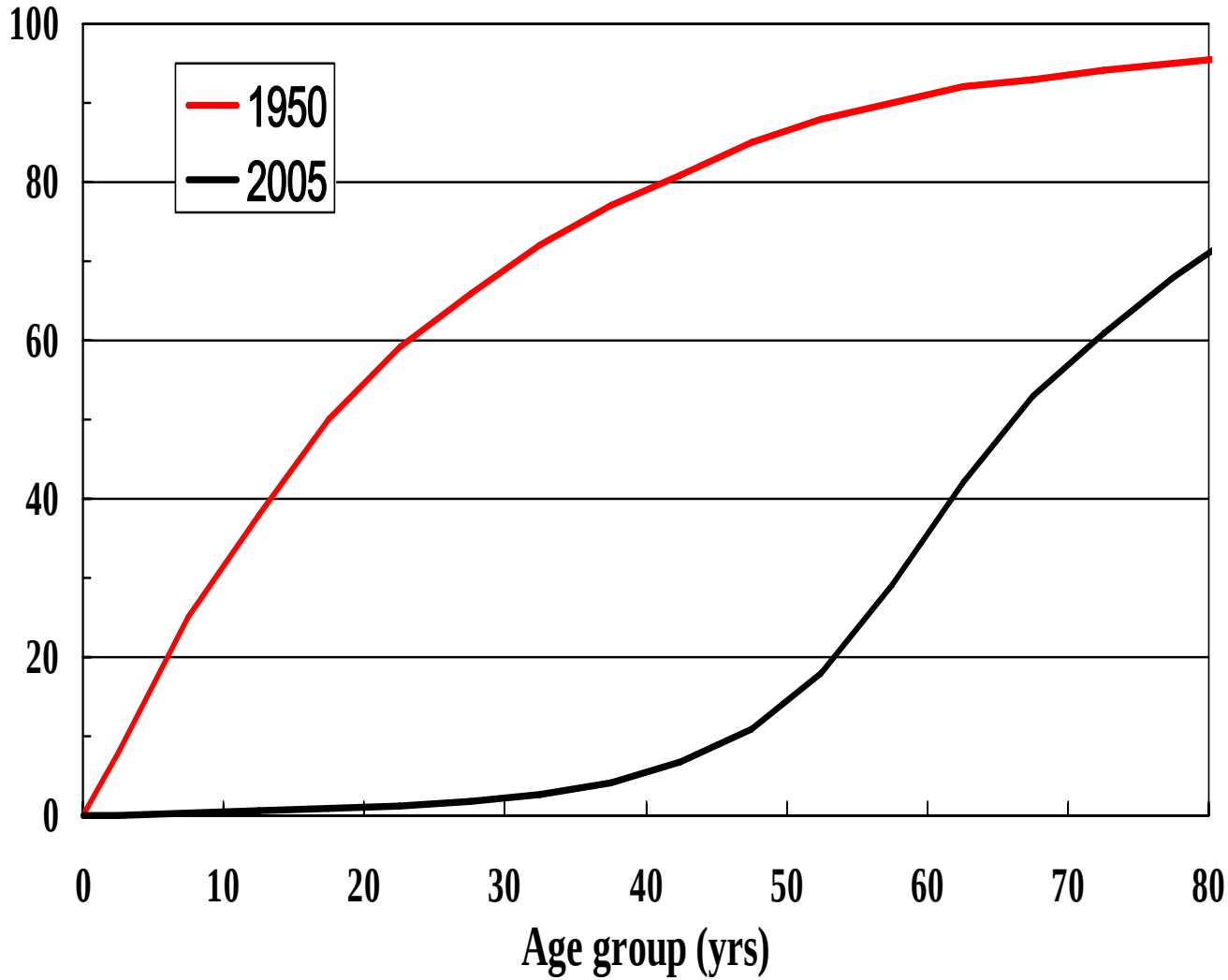

1000
100
10
1
0.1
per 100,000
0
10
20
30
40
50
60
70
80
90
100
Year (19..)
Japan, Case Rate
USA, Case Rate
Japan, Death Rate
USA, Death Rate

Japan as an
"Intermediate TB Burden Country"

(Notification Rate, All forms, 2005 for Japan, 2004 for Others)

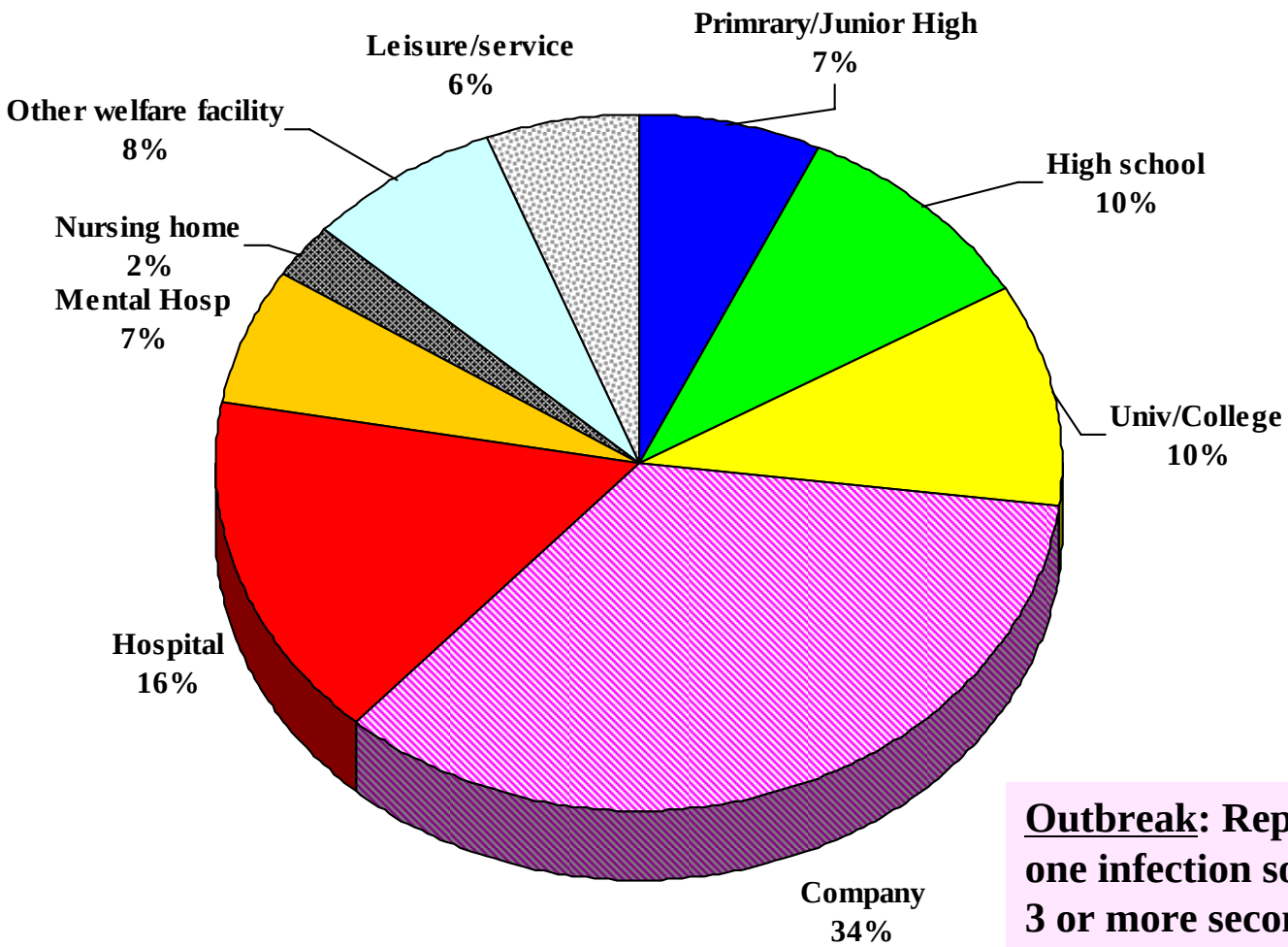


Age-specific Prevalence of Infection
(Japan, Estimated)



Where do TB Outbreaks occur?

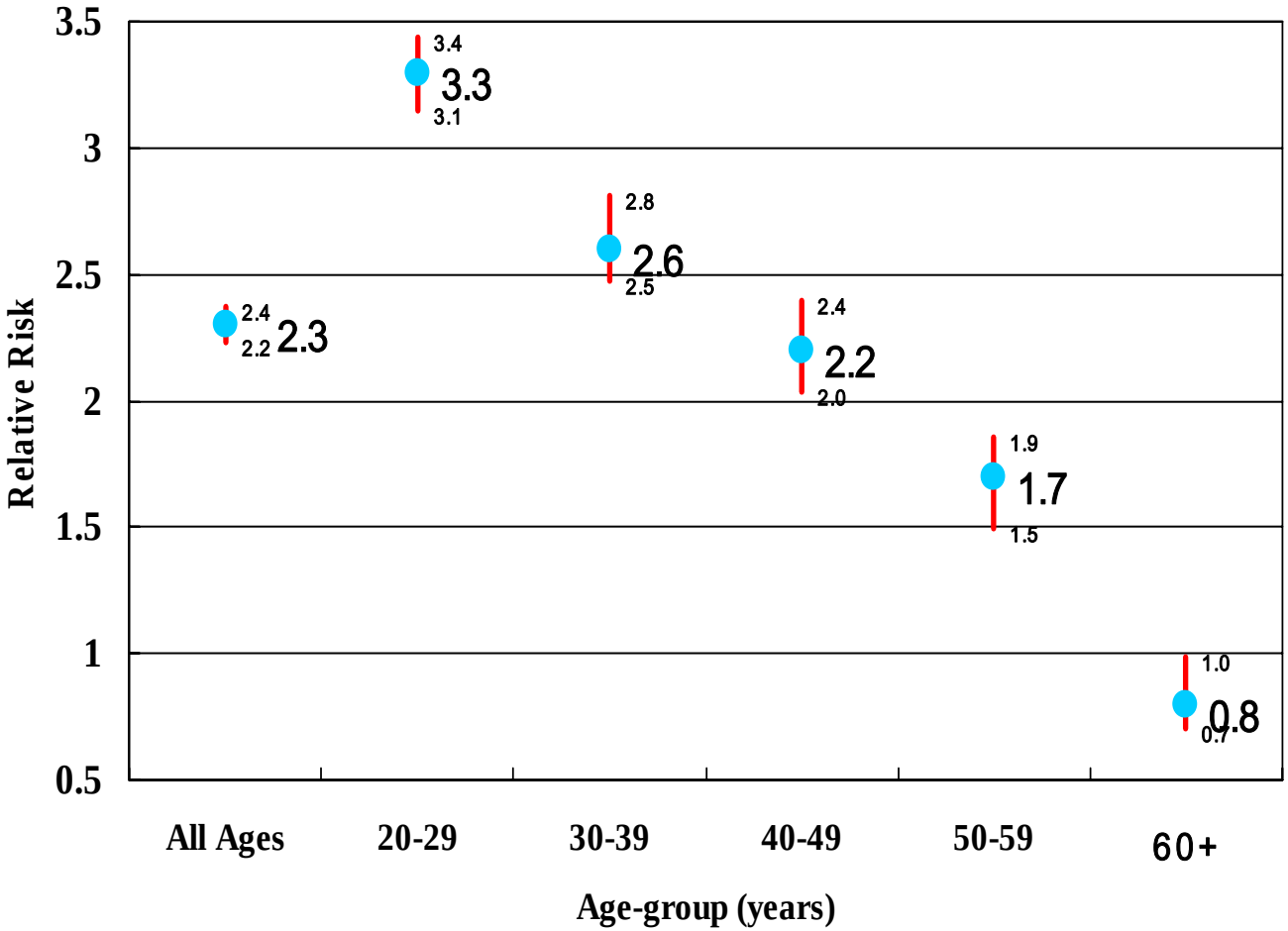
(2000-2006, Total 260)



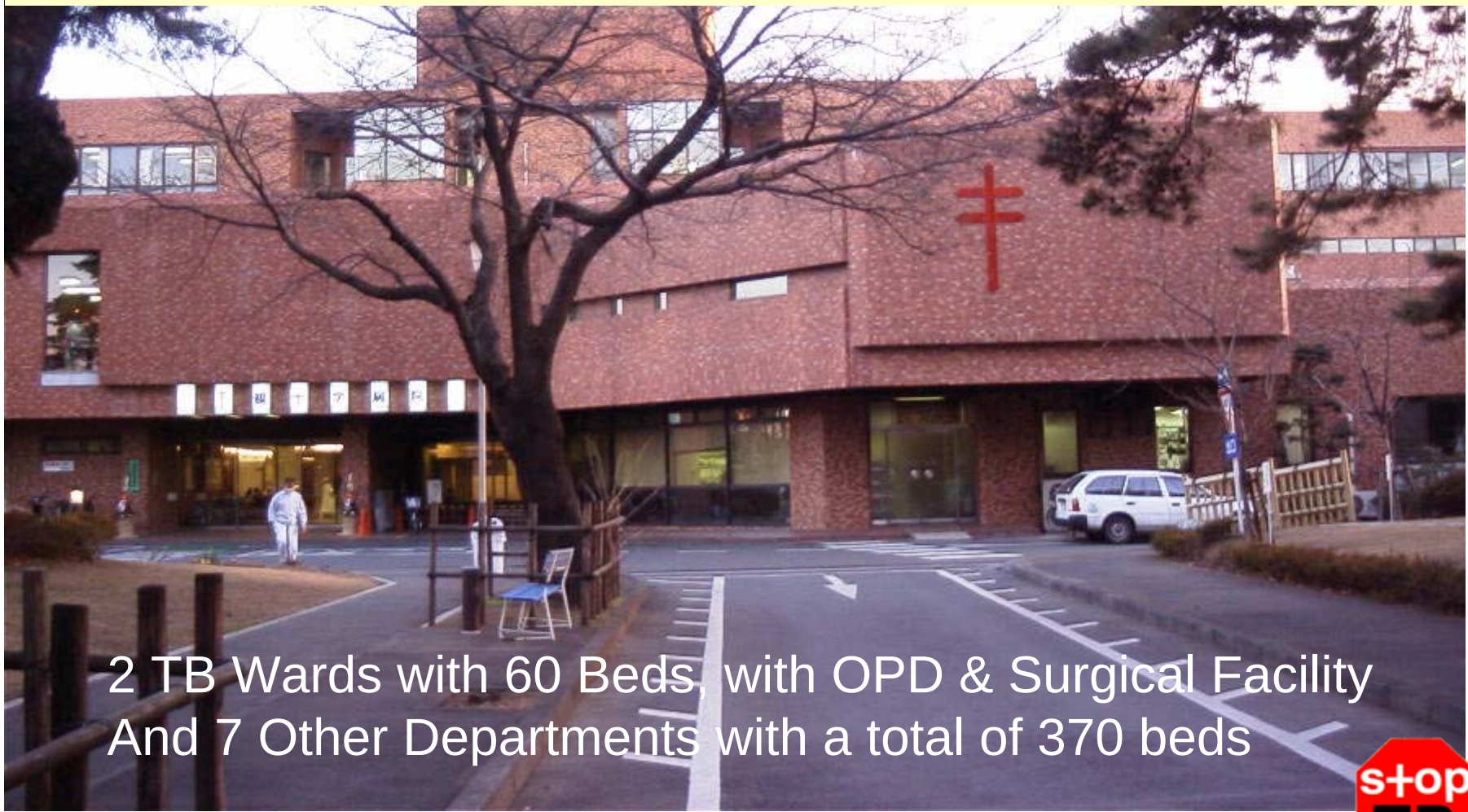
<u>Outbreak</u>: Reportable if one infection source causes 3 or more secondary cases.

TB Risk of Female Nurses

(Japan, 1987-97, TB Surveillance Data, Yamauchi, 1999)



Fukujuji Hospital, Japan Anti-TB Assn



HCW's TB Risk of the Hospital

- Average Incidence of active TB
  - 70/100,000/year during last 10 years – ca. 3 times that of general pop.
- Study population included;
  - 3 (1%) with past history of TB disease
  - 17 (5%) with healed TB lesion on chest X-ray

TB Control Program of the Hospital & Study Subjects

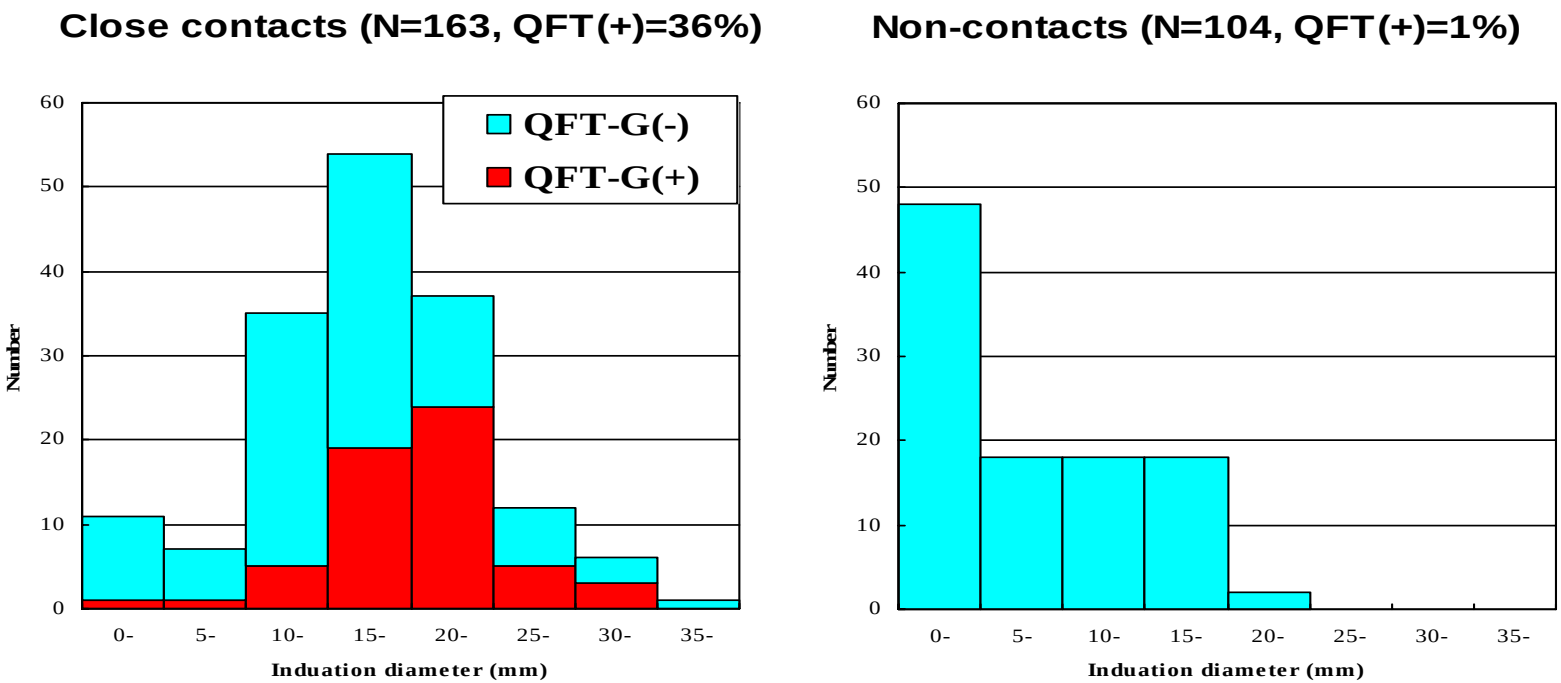
- Two-step TST on employment
- Chest radiophotography (Twice a year)
- Follow-up TST (Once a year for previously weak reactors)
- Use of N95 respirators

Study Participants

- Age: Mean 41 yo (20-75)
- Category (Total 332)
  - Nurse 160
  - Doctor 23
  - Technician 44
  - Clerical 41

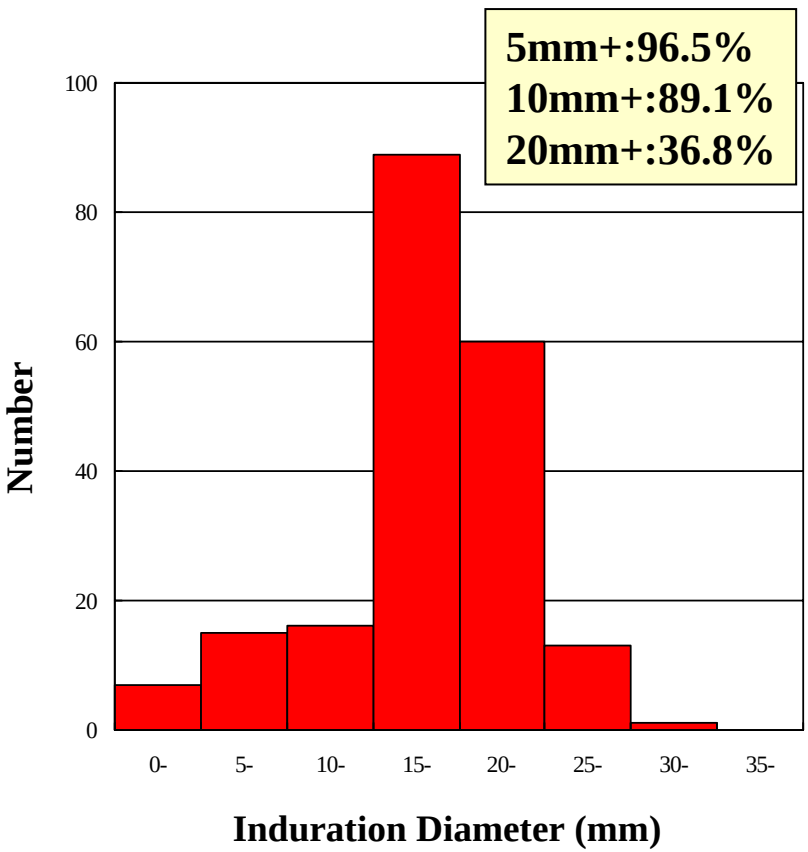
Mx in BCG-Vaccinated Subjects c/s LTBI

(An Outbreak TB Epidemic In a Univ. Campus, Funayama et al, 2005)

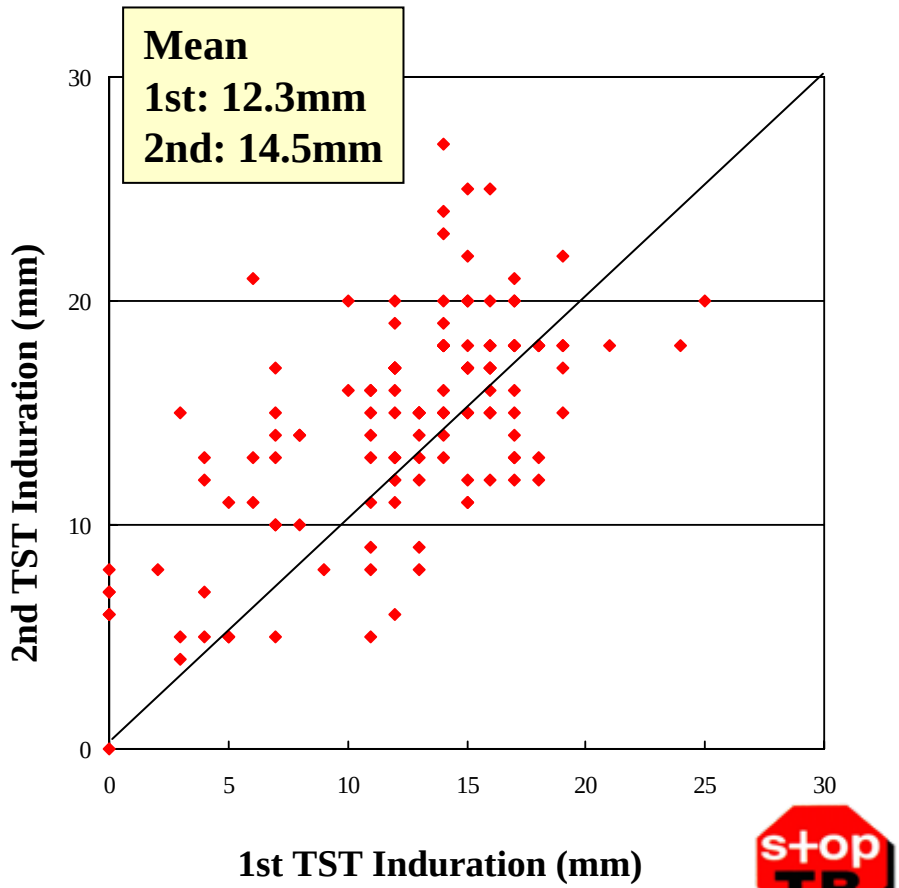


Mx Reactions in Nursing Students

(Aged 18-20 years, Mostly BCG-vaccinated more than once)



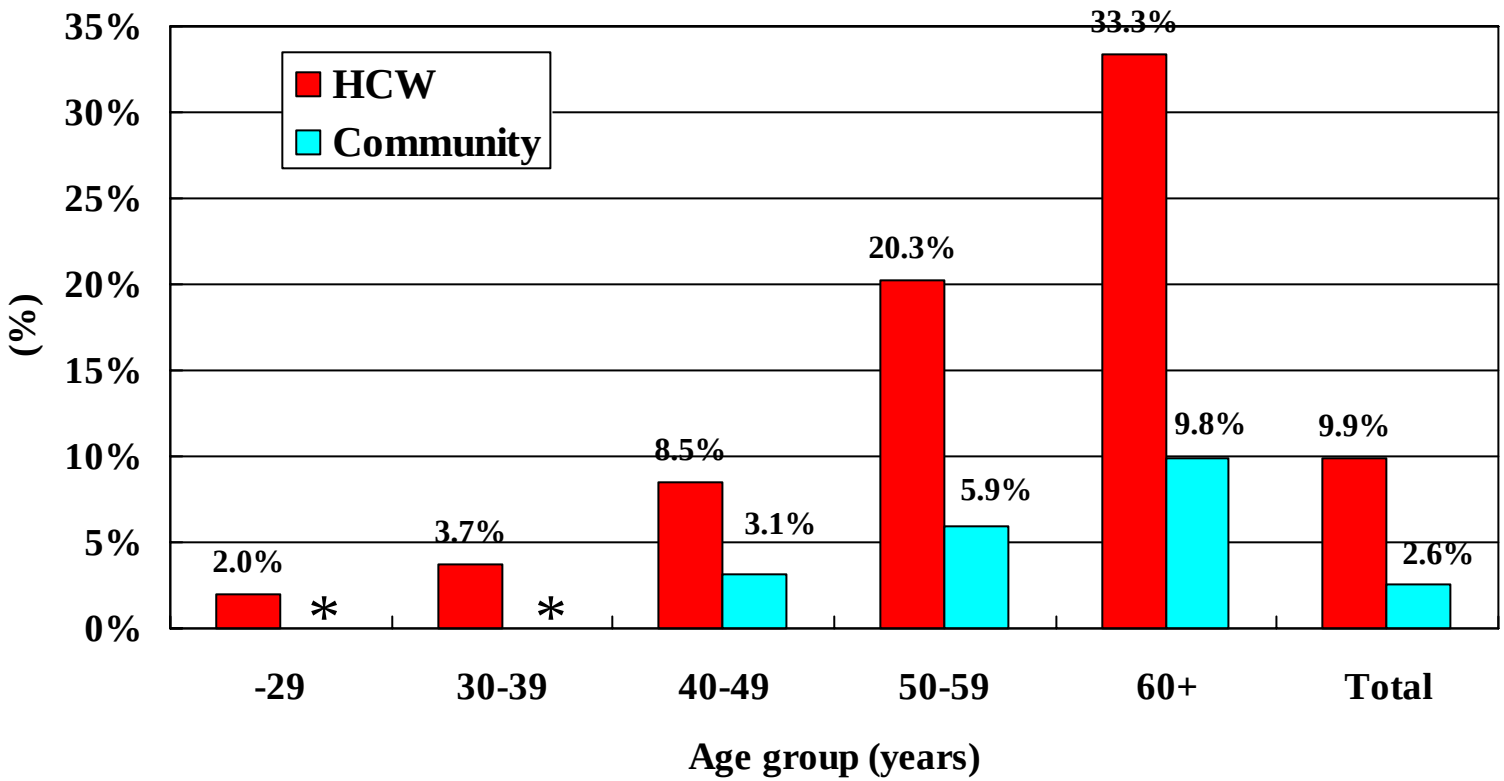
Initial TST



Two-step Test

QFT-G Positivity according to Age

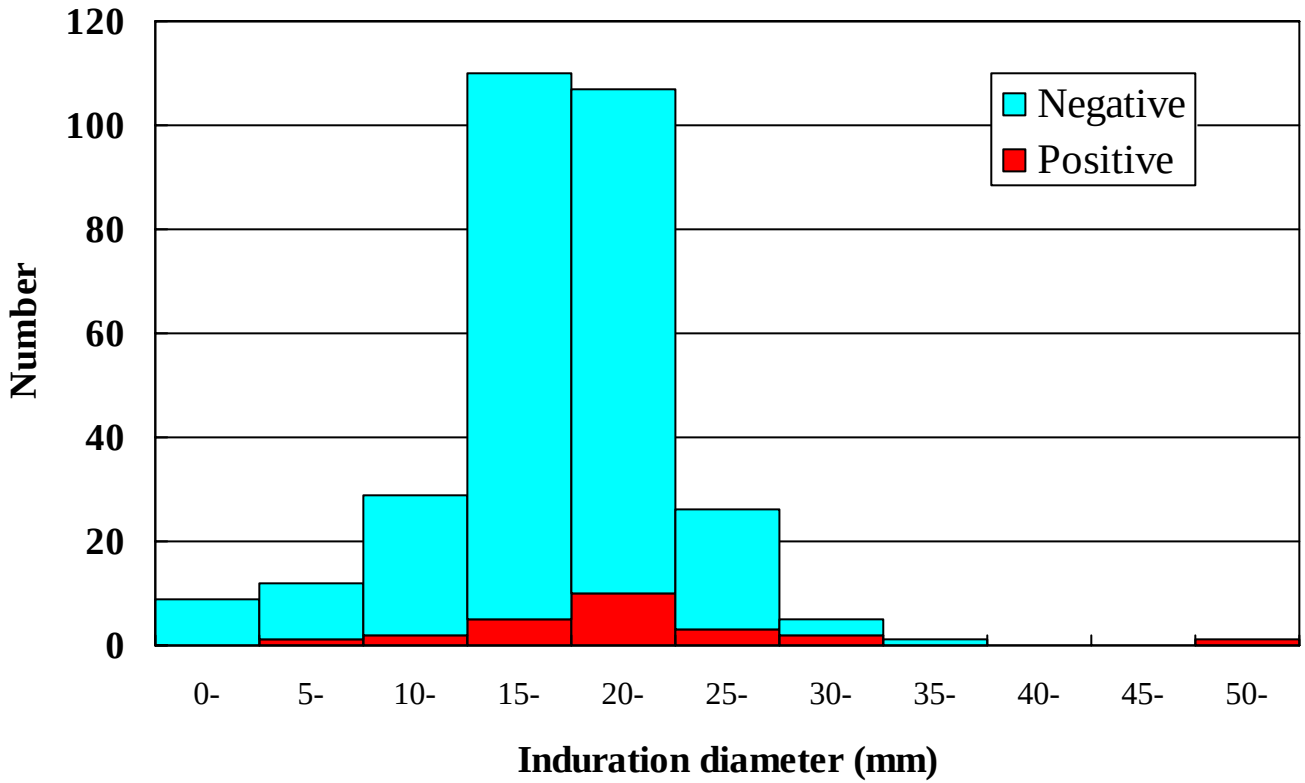
Healthcare Workers (N=329) & General population (N=1,565)



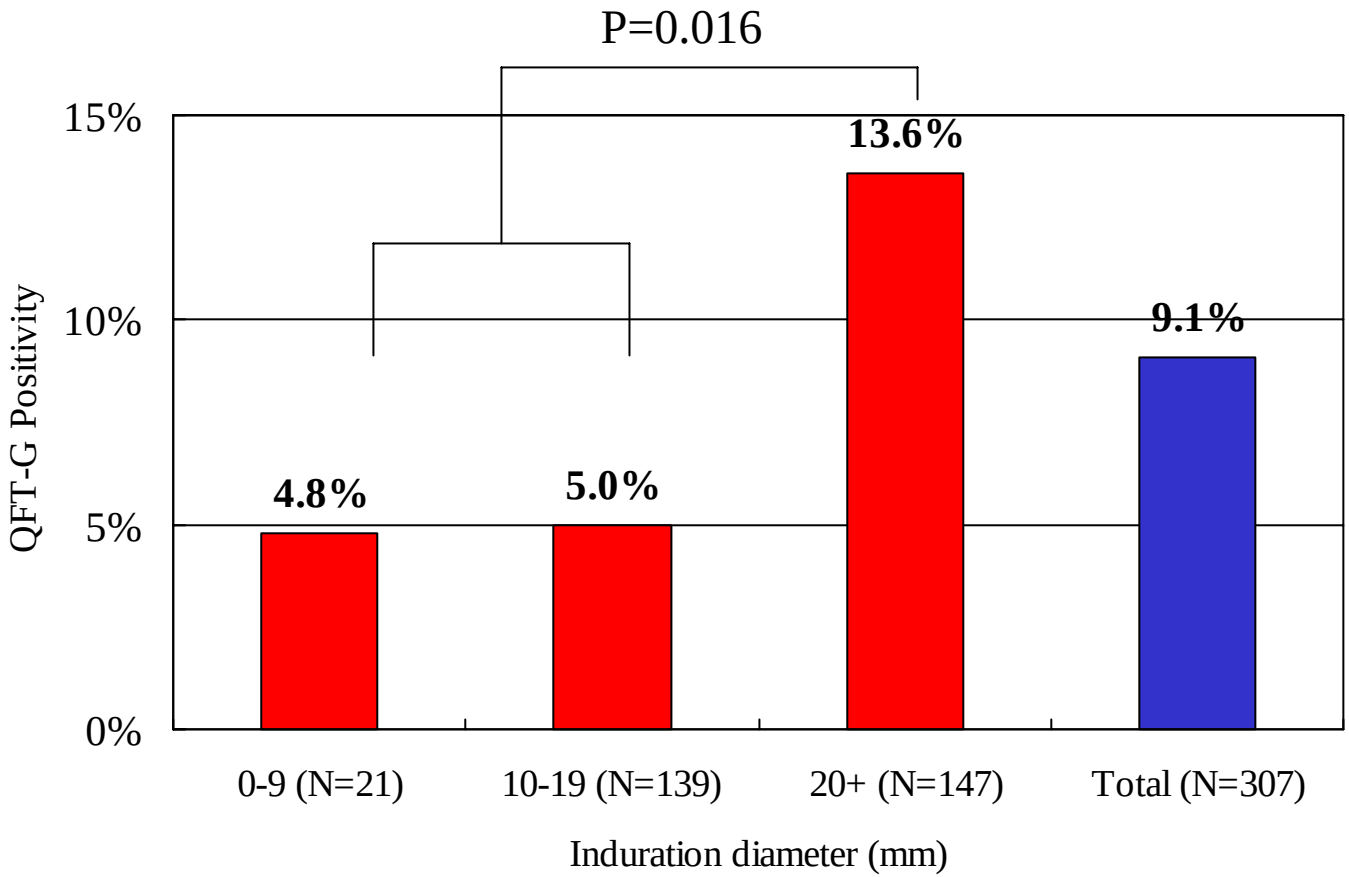
*** Not observed**

Distribution according to Mx Reaction and QFT-G Positivity

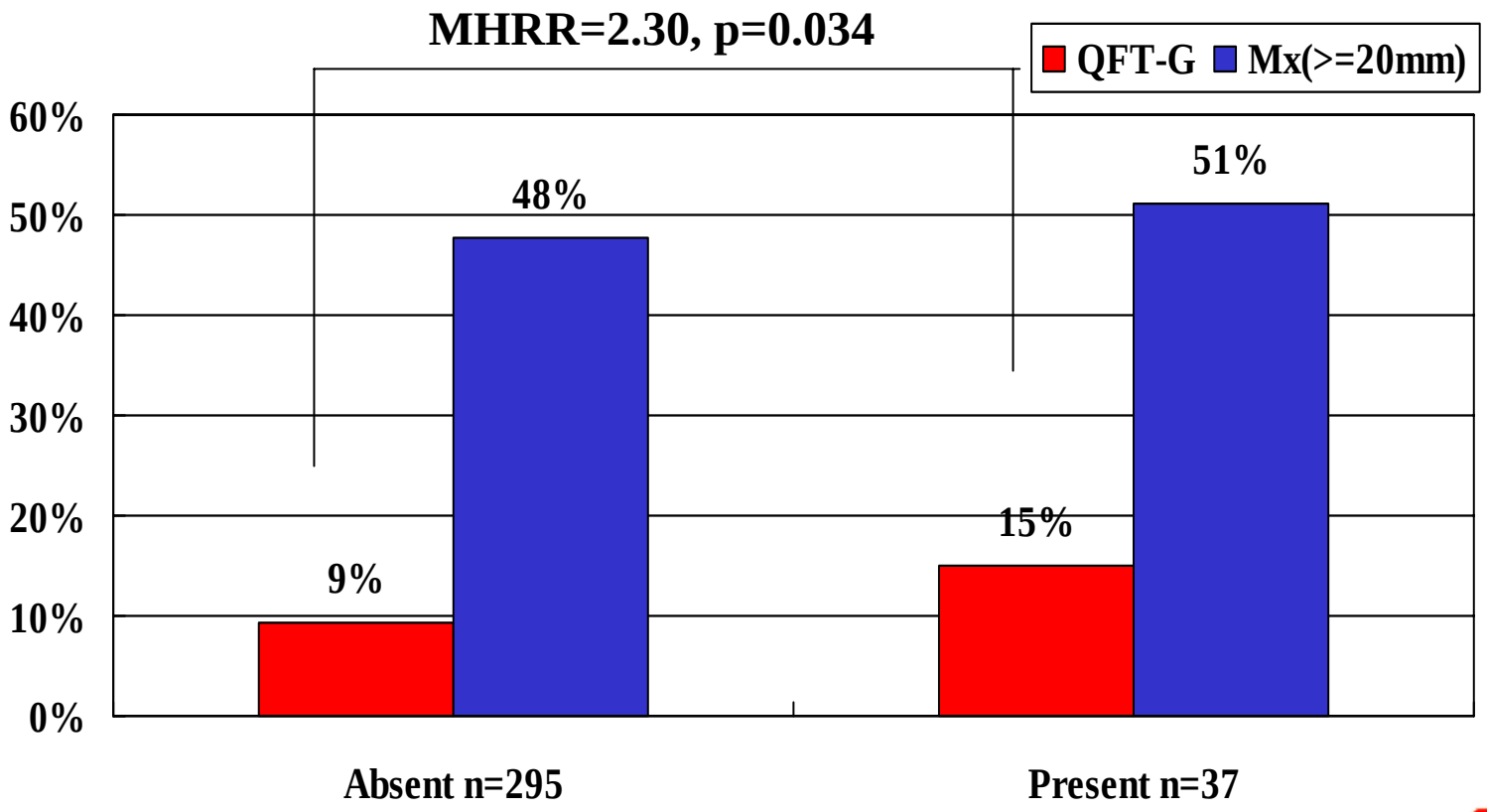
(Healthcare workers, N=300)



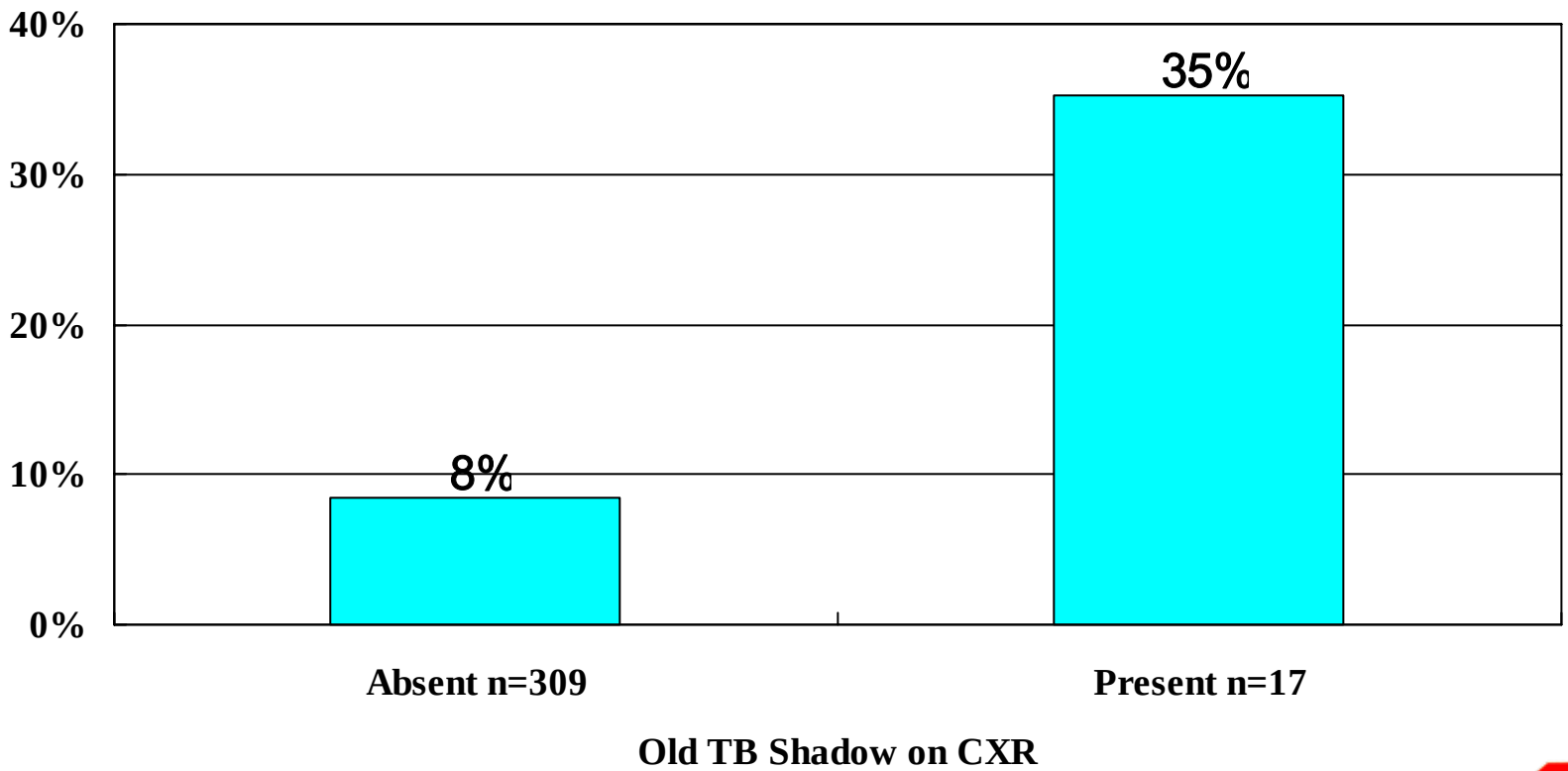
QFT-G Positivity according Mx Reaction Size



QFT-G vs Mx Positivity according to History of TB Ward Service, Age-adjusted (HCW n=332)



QFT-G Positivity according to Old TB Shadow on CXR **(HCW n=326)**



Follow-up after 2 Years (2003 & 2005)

		1st QFT-G Test			
		Negative	**Doubtful**	**Positive**	**Total**
2nd QFT-G	**Negative**	167	3	1	171
	Doubtful	7	10	3	20
	Positive	2	3	18	23
	Total	176	16	22	214

(*Doubtful:* ESAT-6 or CFP-10: 0.15 – 0.35)

"Conversion" Rate = 2.6% (5/192) ---- 1.3%/year
(0.6 – 3.0%)

Converters: 2 TB ward nurses & 3 Other nurses

Policy Proposal

- Replace 2-Step TST with QFT-G for all new employees
- Follow-up previously QFT-G(-) TB ward HCWs with QFT-G annually
- Perform any time QFT-G for other HCWs, when exposed to TB casually
- Stop or reduce MMR for QFT-G (-) persons

Acknowledgment

- Collaborators
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