

Overtesting and its safety risk for patients in Japan

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Today's Outline

- **Overtesting in Japan**
- **Our research about overtesting head CT scan in Japan**

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What is overtesting?

- 1) Non-recommended screening tests in asymptomatic patients**
- 2) More testing than necessary to diagnose patients with signs or symptoms**

Am J Med. 2014;127:362–3.

What is problem about overtesting?

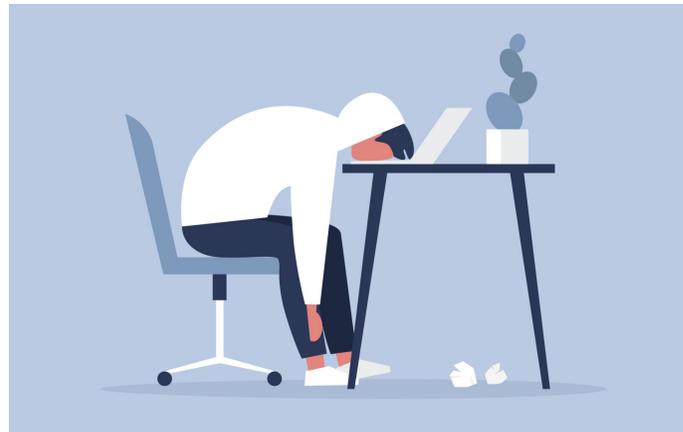
- **Cost**
- **Time wasting**
- **Adverse event**

What is problem about overtesting?

- **Cost**



- **Time wasting**



- **Adverse event**



BMJ. 2012 May 28;344:e3502.

Overtesting in the world

- Patients in the US perceived 21% of overall medical care was **unnecessary**, including 22% of medications, 25% of tests, and 11% of procedures.

PLoS One. 2017;12:e0181970.

- 64.7% of physicians in the US survey believe that at least 15% of medical care is **unnecessary**.

Am J Med. 2014;127:362–3.

25% of unnecessary medical care is testing !

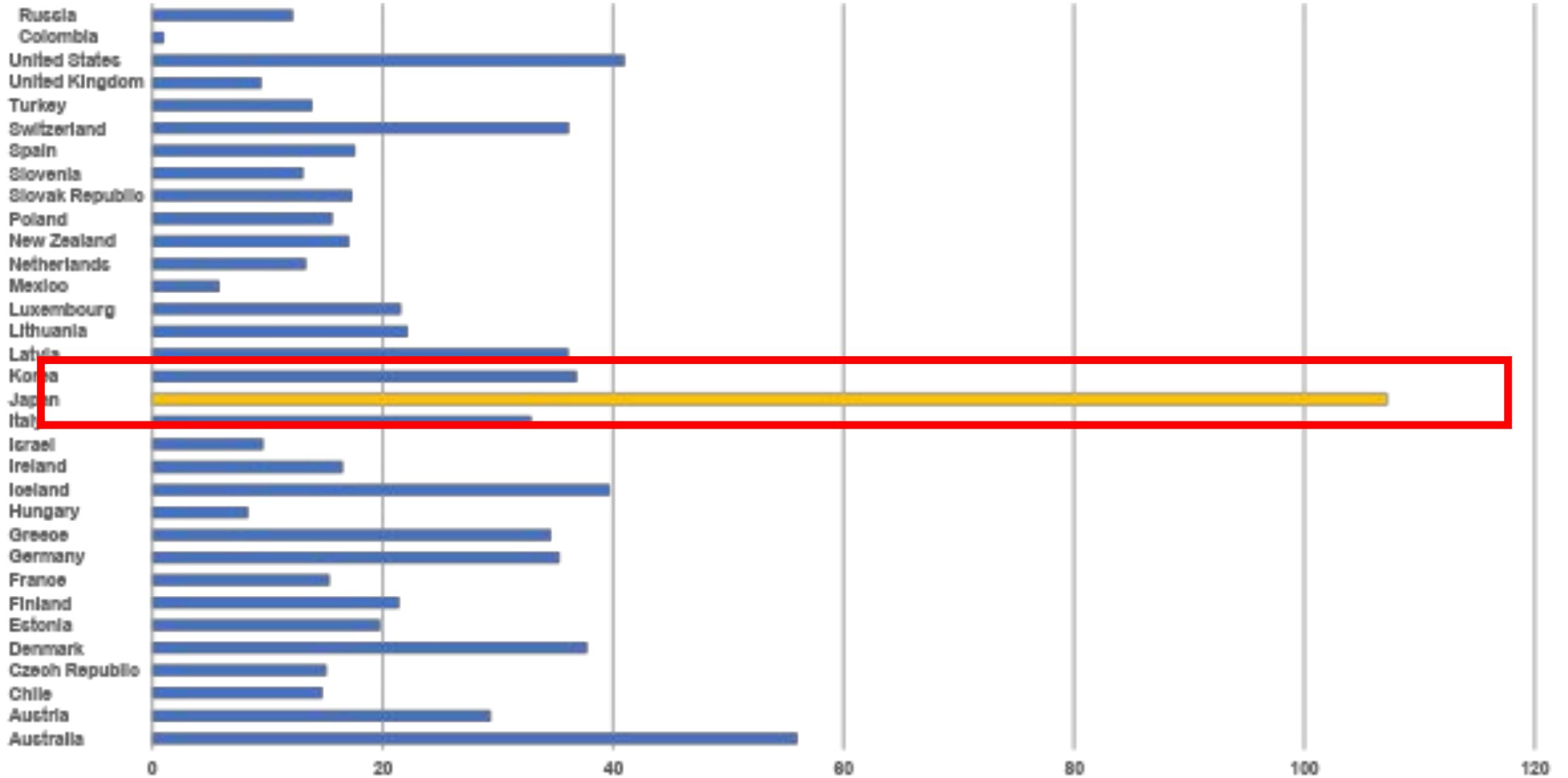


Overtesting of CT scan

- **Of 459 CT and MRI scans, which were assessed, 26% was considered inappropriate.**
- **Especially, 62% of head CT was considered inappropriate.**

J Am Coll Radiol. 2010 Mar;7(3):192-7.

CT per million population in the world



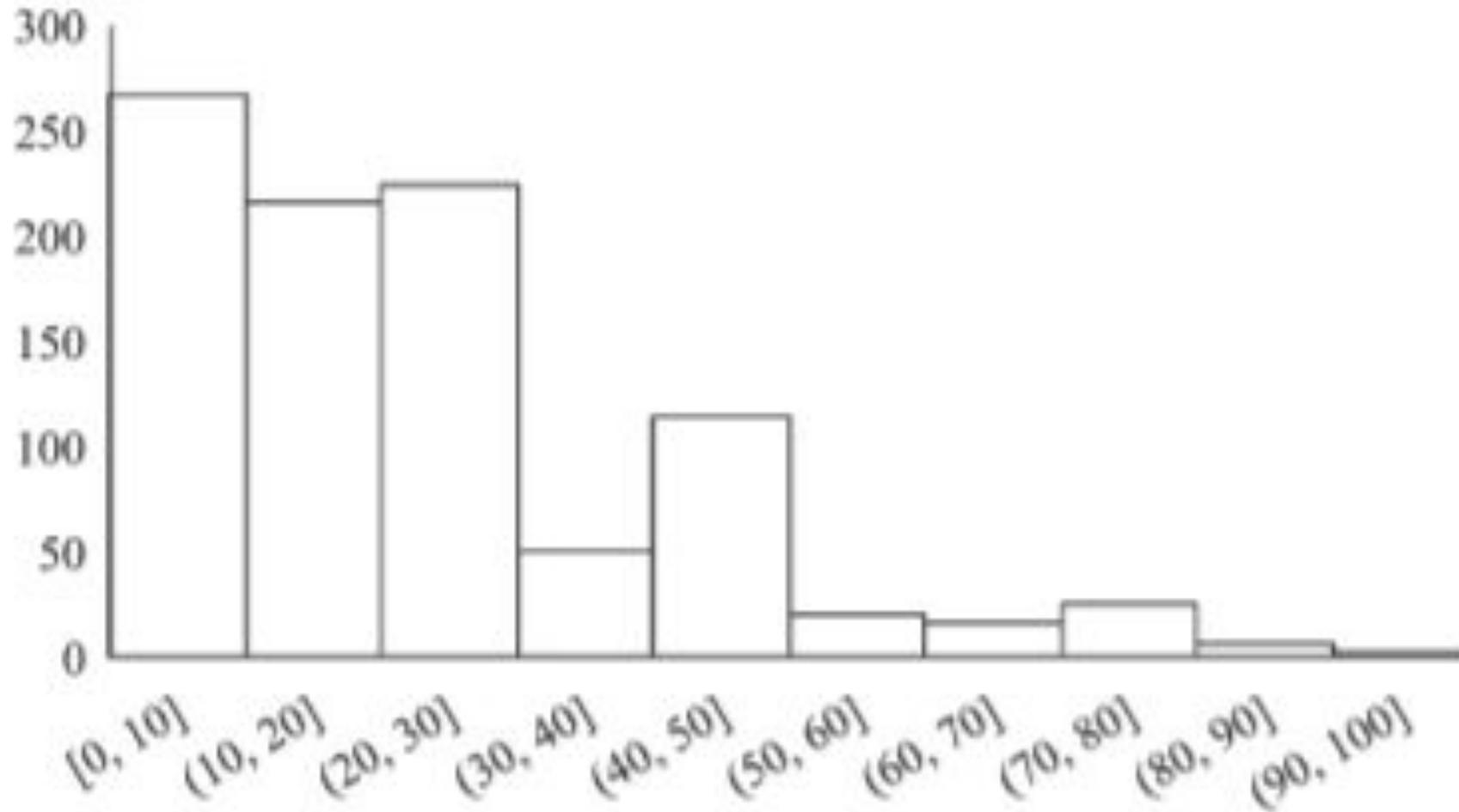
Why Japanese have so many CT scans?



Wabi, Sabi as Japanese culture



Japanese doctors estimated overtesting in health care was **20%**.



Overtesting in Japan

- There **have been were few reports** about over-testing in Japan.
- **Cost of medical care is growing in Japan.**
OECD health data 2019
- There is **no education about appropriate testing** in Japan.

Summary

- **Overtesting is big problem for the world, including Japan.**
- **There are too many CT scans in Japan.**
- **But medical cost is growing.**
- **We need about quality research, especially overtesting.**

Today's Outline

- Overtesting in Japan

- **Our research about overtesting head CT scan in Japan**

①	Don't order CT head scans in adults and children who have suffered minor head injuries (unless positive for a validated head injury clinical decision rule).
②	Don't prescribe antibiotics in adults with bronchitis/asthma and children with bronchiolitis.
③	Don't order lumbosacral (low back) spinal imaging in patients with non-traumatic low back pain who have no red flags/pathologic indicators.
④	Don't order neck radiographs in patients who have a negative examination using the Canadian C-spine rules.
⑤	Don't prescribe antibiotics after incision and drainage of uncomplicated skin abscesses unless extensive cellulitis exists.

① **Don't** order CT head scans in adults and children who have suffered minor head injuries (unless positive for a validated head injury clinical decision rule).

② **Don't** prescribe antibiotics in adults with bronchitis/asthma and children with bronchiolitis.

③ **Don't** order lumbosacral (low back) spinal imaging in patients with non-traumatic low back

There is no such education in Japan.

④ **Don't** order neck radiographs in patients who have a negative examination using the Canadian C-spine rules.

⑤ **Don't** prescribe antibiotics after incision and drainage of uncomplicated skin abscesses unless extensive cellulitis exists.

Choosing Wisely Recommendation from Consortium of Japanese Generalist Teachers

1. **Don't** recommend PET-CT cancer screening for asymptomatic adults.
2. **Don't** recommend tumor marker screening for asymptomatic adults.
3. **Don't** recommend MRI brain screening for asymptomatic adults.
4. **Don't** perform routine abdominal CT for non-specific abdominal pain.
5. **Don't** place urinary catheters simply for provider convenience.

Previous research about inappropriate CT use in Japan

- **There have been studies such as whole-body CT scan with blunt trauma between adult and child.**

J Trauma Acute Care Surg. 2013 Aug;75(2):202-6.

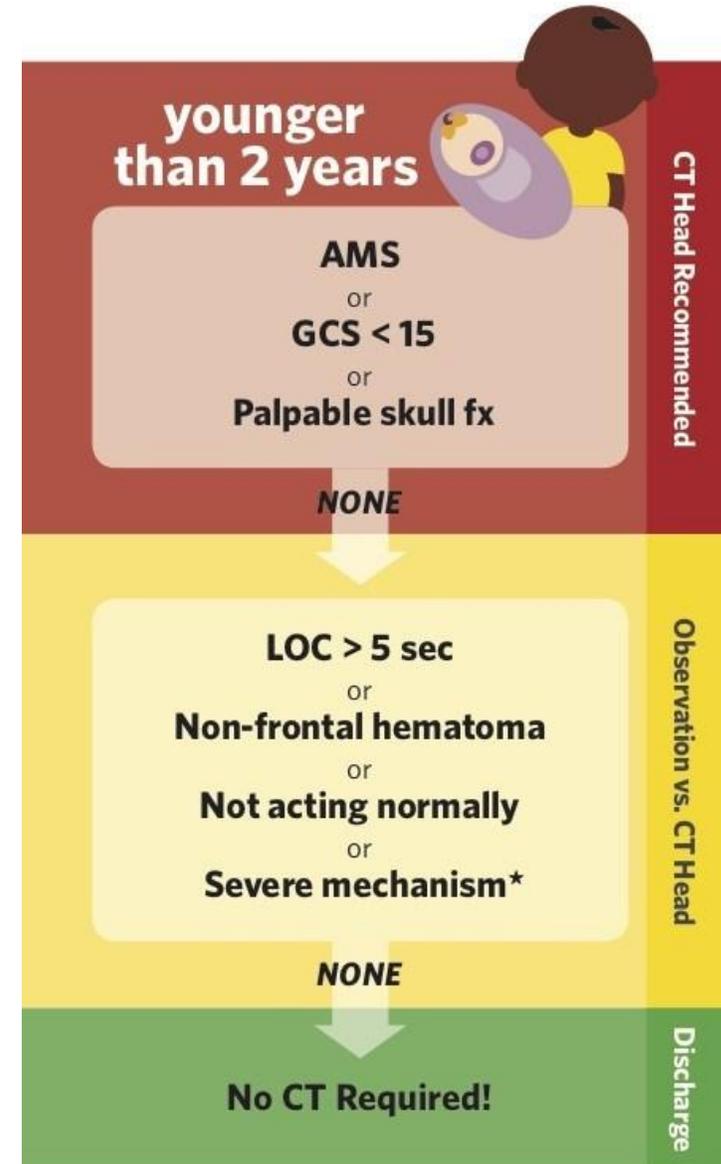
Pediatr Crit Care Med. 2019 Jun;20(6):e245-e250.

- **There has been no research about mild head injury in Japan.**

CCHR (Canadian CT Head Rule)



PECARN rule



our study

Overtesting for minor head injury in Japan

The objective of our study

To investigate how frequently is head CT scan ordered inappropriately for patients with head injury in a Japanese hospital?

Inclusion criteria

- **All head CT orders for patients with head injury in ED in Urasoe General Hospital from April 2019 to May 2019 were included.**

Exclusion criteria

- **Patients who did not provide consent to participate in study**
- **Patients on baseline anticoagulation/antiplatelet drugs**

- **Primary outcome**

The number of head CT ordered inappropriately among patients who were considered at low risk by standard rules (CCHR or PECARN)

- **Secondary outcome**

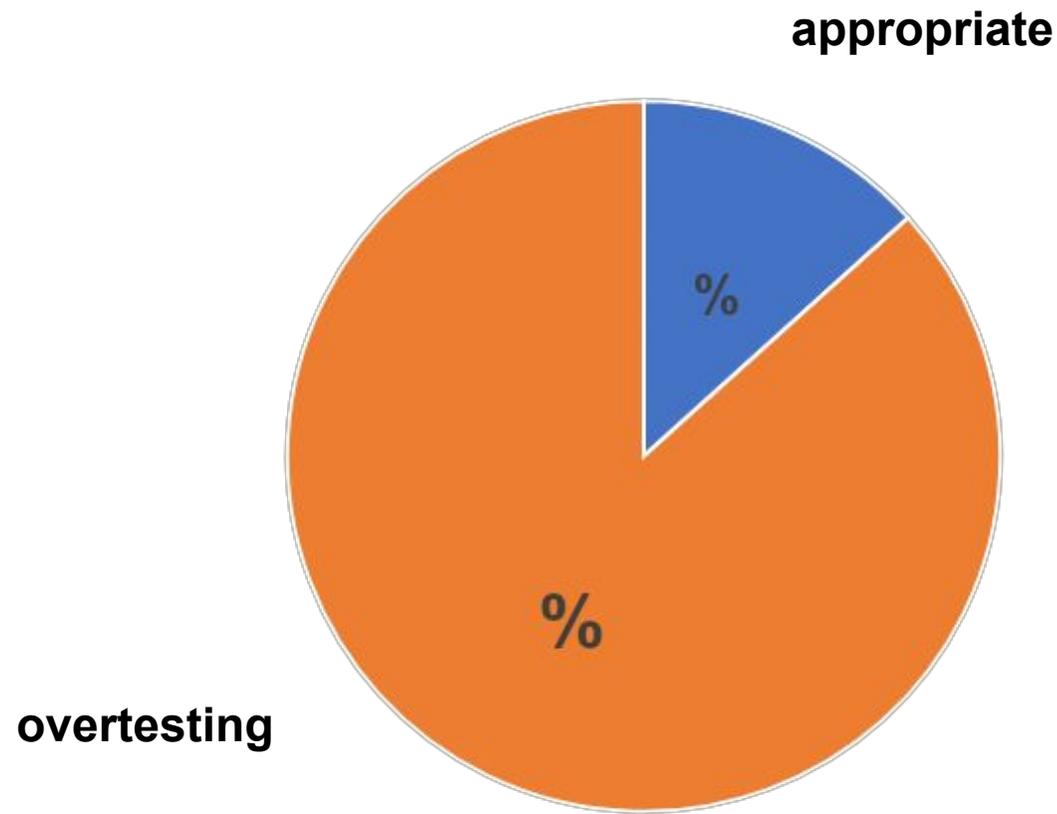
CT scans for other body sites

Physicians who ordered head CT scans (PGY 1, 2, or other)

Patient Characteristics

	n=75
Median age (25-75 percentiles)	41 (18-64)
Men (%)	43 (56)
Median GCS (25-75 percentiles)	14.8(14-15)
CT scan for other sites (%)	22 (29)

Primary Outcome: overtesting rate=**39/45 (86.7%)**



0.7345 to 0.9412 (95% CI)

Inappropriate CT scans
in all head CT scans
39/85 (45.9%)

The details of overtesting cases

	n=39
Median age (25-75 percentiles)	42.6(29-52)
Men (%)	43(56%)
CT scans for other sites (%)	15(38%)
Physicians who ordered	PGY1 19(48%)
	PGY2 17(43%)
	Other 3(9%)

Discussion

- **There was high proportion of overtesting for minor head injury in a teaching hospital in Japan.**
- **Greater education for junior residents could reduce medical cost because most CT scans were ordered by them.**
- **Other studies such as laboratory overtesting are needed.**

Limitation

- **This was a study based on single institution.**
- **Used only CCHR as clinical prediction rule.**
- **The causes of overtesting were not determined (e.g., parent's request).**
- **Only descriptive statistics due to small sample size.**

Conclusion

- **We show there is high proportion of overtesting in CT scan use for patients with minor head injury.**
- **Educational efforts for junior residents are needed to improve value of care in ER.**
- **Additional research is needed because there may be many potentially inappropriate tests.**



**Thank
you**

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