

# **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**

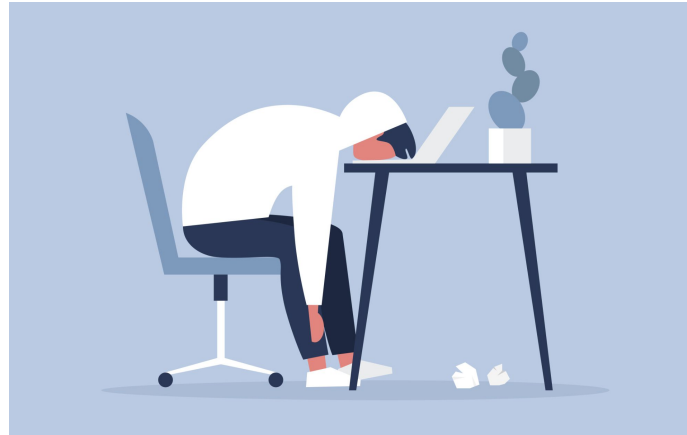
Am J Med. 2014;127:362–3.

# **What is problem about overtesting?**

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

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- 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 !

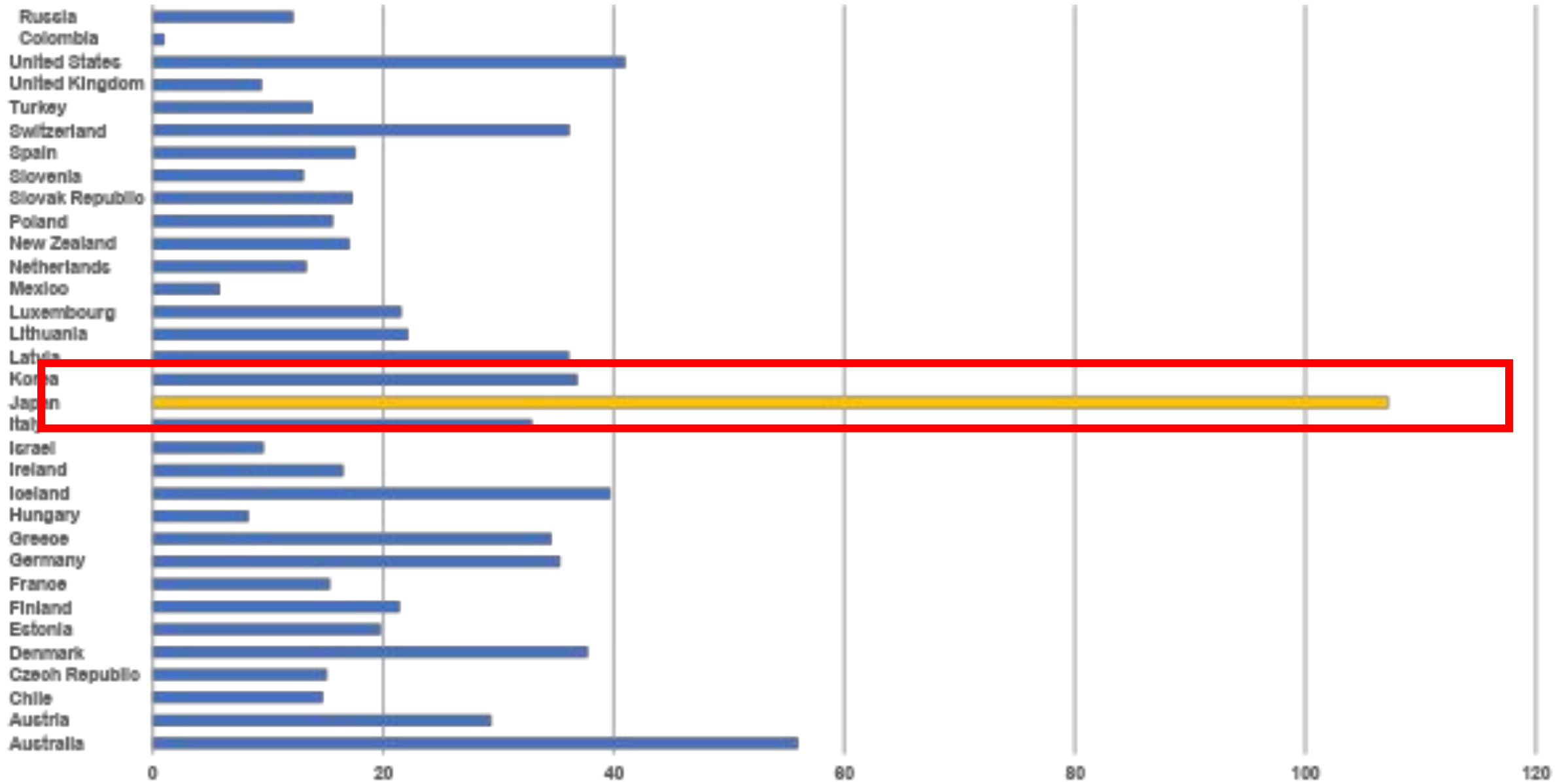


# Overtesting of CT scan

- 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



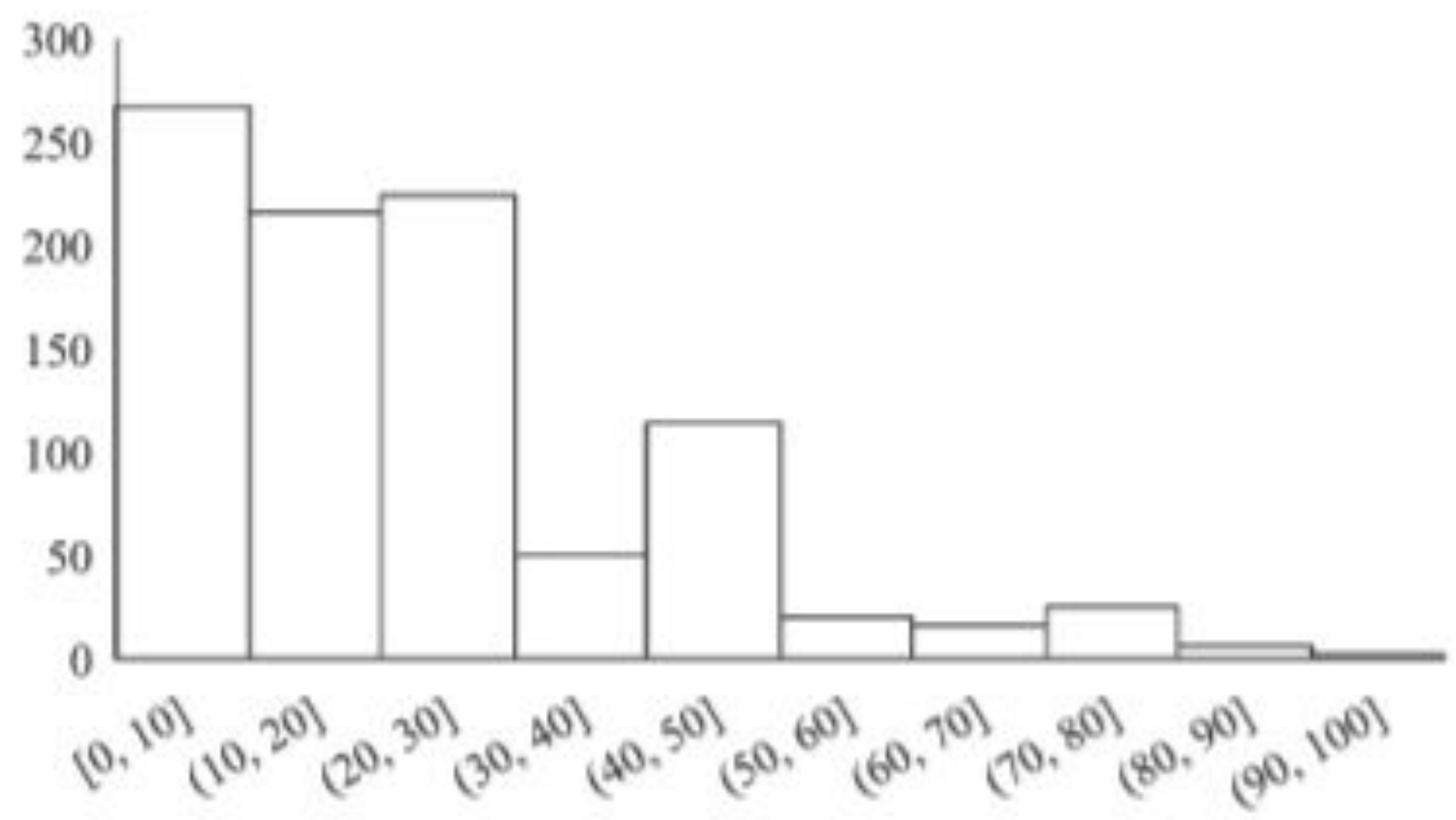
# Why Japanese have so many CT scans?



# 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 overttesting.**

# Today's Outline

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

①	<b>Don't</b> 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	<b>Don't</b> prescribe antibiotics in adults with bronchitis/asthma and children with bronchiolitis.
③	<b>Don't</b> order lumbosacral (low back) spinal imaging in patients with non-traumatic low back pain who have no red flags/pathologic indicators.
④	<b>Don't</b> order neck radiographs in patients who have a negative examination using the Canadian C-spine rules.
⑤	<b>Don't</b> 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.

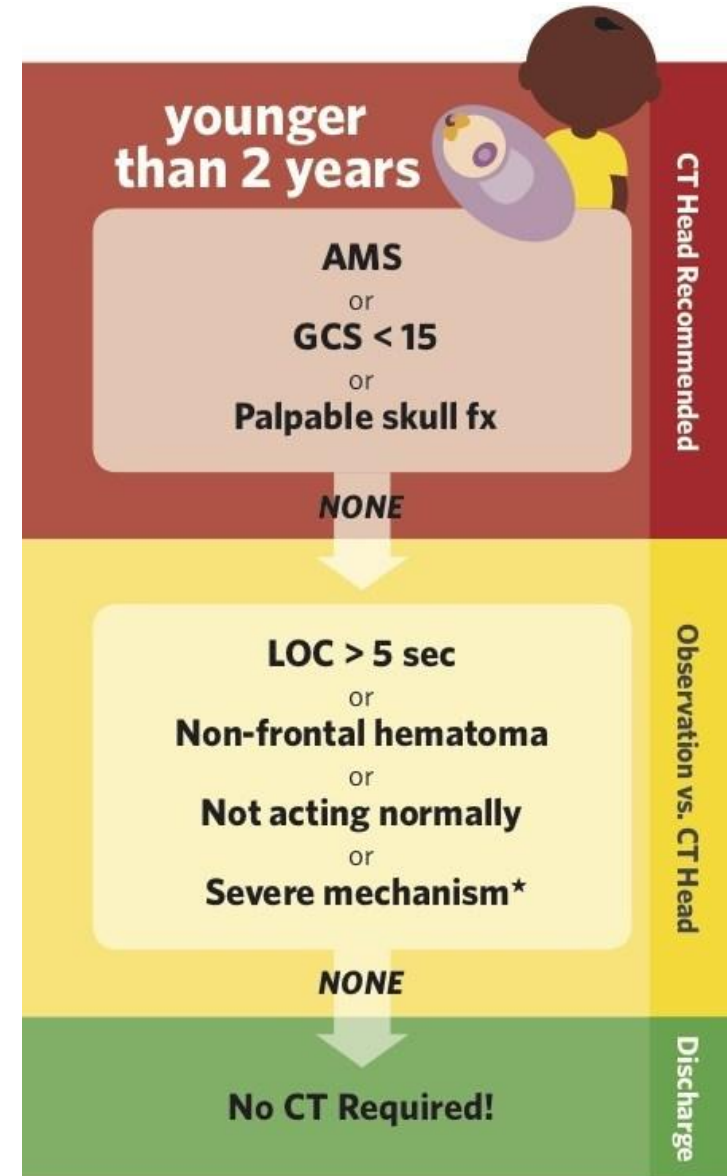
Pediatr Crit Care Med. 2019 Jun;20(6):e245-e250.

- **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**

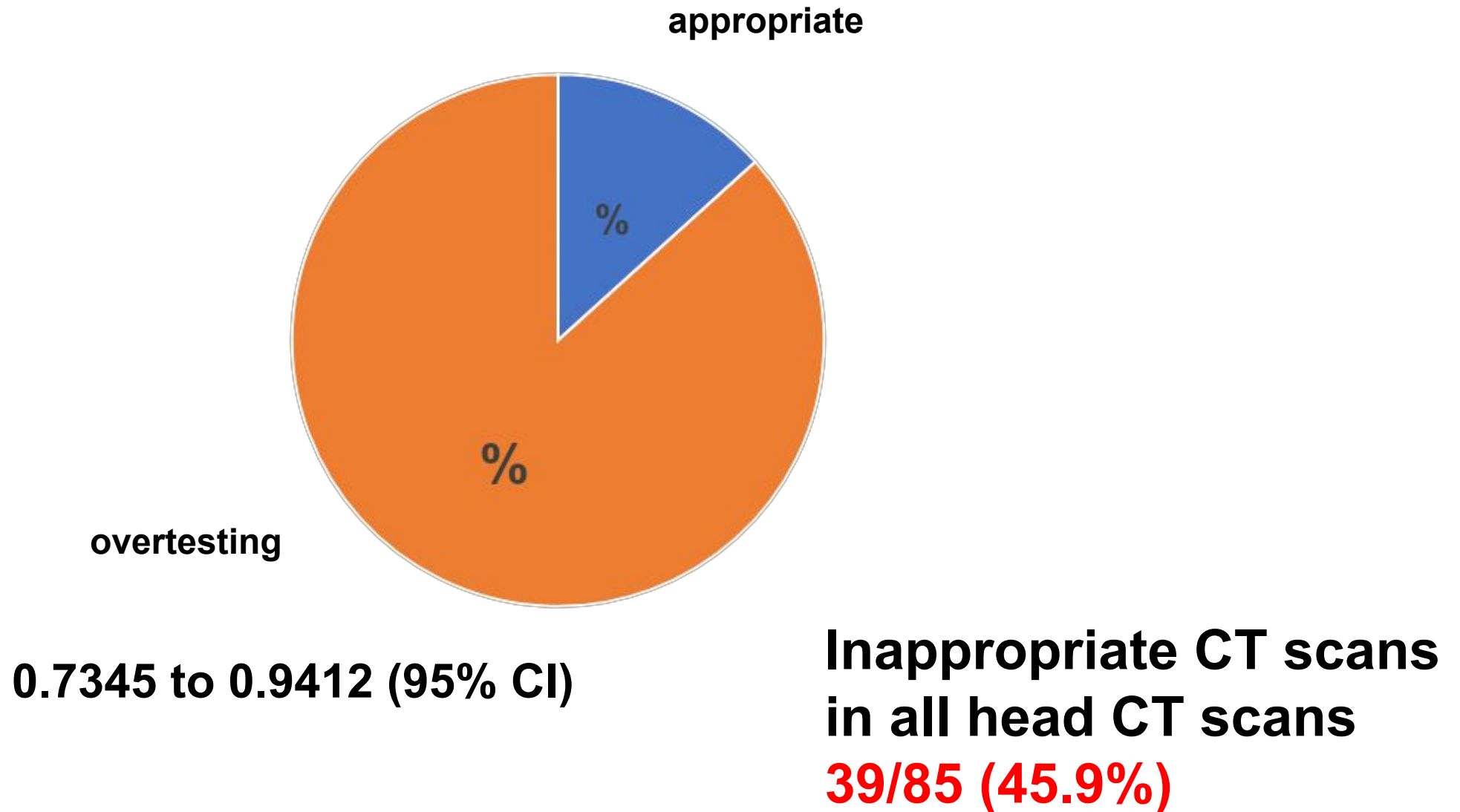
**CT scans for other body sites**

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

# Patient Characteristics

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

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



# The details of overtesting cases

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

# 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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