

Use of Diagnostic Imaging Without Recorded Indication: **Choosing Wisely Recommendations and Clalit Health Services**

Maya Leventer-Roberts¹, Ze'ev Sender², Ziv Rosenbaum², Nicky Lieberman², Ilan Gofer¹, Michael Sherf², Ran Balicer^{1,2}

¹ Clalit Health Services, Tel Aviv, Israel

² Clalit Research Institute, Chief Physician's Office, Clalit Health Services, Tel Aviv, Israel

BACKGROUND

Reduction of unjustified testing can improve the quality of health care. The Institute of Medicine has released recommendations for which practices have clinical justification, termed "Choosing Wisely".

STUDY OBJECTIVE

Describe practices that are performed at Clalit Health Services without clinical indication:

- » Computerized Tomography (CT) before ultrasound (US) for evaluation of childhood appendicitis
- » Chest radiogram (CXR) for non-cardiopulmonary emergency department presentation
- » Bone densitometry scans (DEXA) for patients at low-risk for fracture

METHODS

We extracted medical history data from the comprehensive electronic health care records for continuous members in of Clalit Health Services, a payer/provider system that services over 4.3 million or 53% of the Israeli population. We created algorithms to identify imaging performed "without clinical indication" based on the published Choosing Wisely guidelines.

Clinical Indication: CT

Recommendation: "Don't do computed tomography (CT) for the evaluation of suspected appendicitis in children until after ultrasound has been considered as an option."

Application: All children presenting with abdominal pain or who were subsequently diagnosed with appendicitis were included.

Clinical Indication: CXR

Recommendation: "Avoid admission or preoperative chest x-rays for ambulatory patients with unremarkable history and physical exam."

Application: All members who were admitted through the emergency department were included. Acute cardiopulmonary disease was indicated by any diagnosis of respiratory or cardiac ICD9 at any time during admission.

Clinical Indication: DEXA

Recommendation: "Don't use dual-energy x-ray absorptiometry (DEXA) screening for osteoporosis in women younger than 65 or men younger than 70 with no risk factors."

Application: All patients received a first-ever DEXA scan were included. Presence of any risk factor was noted, including: Breaking a bone in a minor accident, Having rheumatoid arthritis, Having a parent who broke a hip, Smoking, Having a low body weight, Using corticosteroid drugs for three months or more, Having a very low vitamin D level.

RESULTS

- » The following tests are performed at Clalit Health Services without clinical indication, from 2012-2015:
- » CT: there were 29,788 children evaluated and 12.0% of them received a CT, of which 2/3rds were without a preceding ultrasound.
- » CXR: there were 225,618 adults who were admitted through the emergency room and 29.6% of them received a CXR without clinical indication, of which 2/3rds were less than 65 years old.
- » DEXA: there were 74,638 adults who were admitted through the emergency room and 20.2% of them received a DEXA without clinical indication, of which 3/4ths were female.

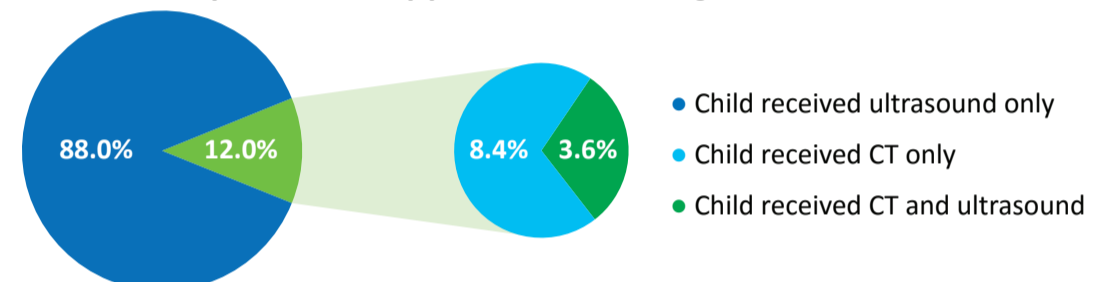
RESULTS

Table 1: Tests performed at Clalit Health Services without clinical indication by year, 2012-2015

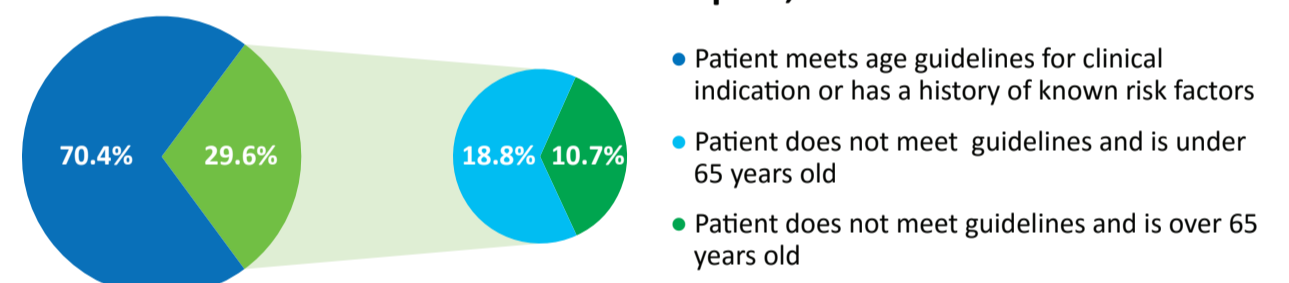
Year	CT for Appendicitis		CXR in Emergency Department		DEXA for Osteoporosis screening	
	# of children	% with CT	# of adults	% without clinical indication	# of members	% without clinical indication
2012	3,723	14.1%	55,858	30.1%	20,688	20.3%
2013	4,264	12.6%	56,753	29.6%	18,698	20.1%
2014	4,432	11.3%	55,123	28.6%	18,496	20.5%
2015	4,262	10.4%	57,884	30.0%	16,756	19.9%
Total	29,788	12.0%	225,618	29.6%	74,638	20.2%

Figure 1: Percent and characteristics of tests performed at Clalit Health Services without clinical indication, 2012-2015

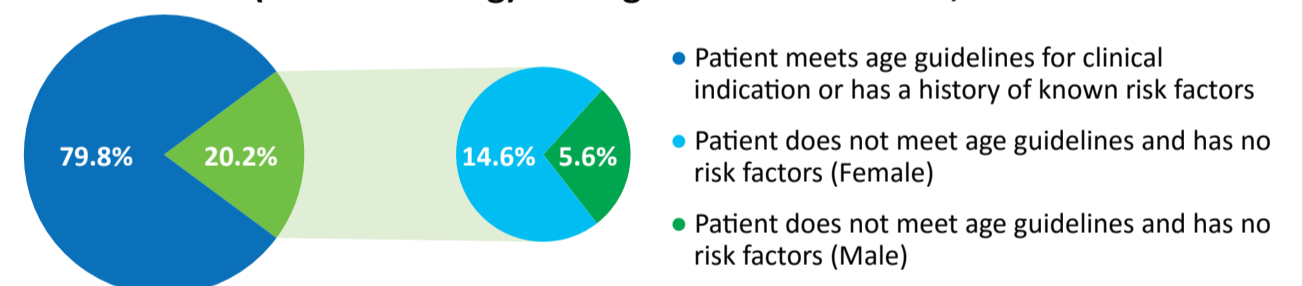
CT for presumed appendicitis among all Clalit Children, 2012-2015



CXR in Emergency Department among Adult Clalit Members who are Admitted to a Clalit Hospital, 2012-2015



DEXA (First Screening) among all Clalit Members, 2012-2015



CONCLUSIONS

An evaluation of three types of imaging tests in Clalit Health Services revealed a range from 10% to 30% of testing performed without clinical indication by Choosing Wisely recommendations.

HEALTH POLICY IMPLICATION

The application of system-wide policy adherence to Choosing Wisely recommendations can have significant implications. Understanding their impact and the sub-populations at highest risk for such testing can help prioritize the need for interventions.

References

- Choosing Wisely (www.choosingwisely.org)
- Colla CH, Morden NE, Sequist TD, Schpero WL, Rosenthal MB. Choosing wisely: prevalence and correlates of low-value health care services in the United States. *J Gen Intern Med.* 2015 Feb;30(2):221-8. doi: 10.1007/s11606-014-3070-z. Epub 2014 Nov 6.
- Gonzales R, Cattamanchi A. Changing Clinician Behavior When Less Is More. *JAMA Intern Med.* 2015 Dec;175(12):1921-2. doi: 10.1001/jamainternmed.2015.5987.
- Rosenberg A, Agiro A, Gottlieb M, Barron J, Brady P, Liu Y, Li C, DeVries A. Early Trends Among Seven Recommendations From the Choosing Wisely Campaign. *JAMA Intern Med.* 2015 Dec;175(12):1913-20. doi: 10.1001/jamainternmed.2015.5441.