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Standardising European imaging practice: European Cystic Fibrosis Society Clinical Trial Network & European Respiratory Society

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Standardising European Imaging Practice

European Cystic Fibrosis Society Clinical Trial Network & European Respiratory Society

Background

WHO?

- The European Cystic Fibrosis Society – Clinical Trial Network (ECFS-CTN) are the pan-European network of 57 CF centres across 17 different European countries
- One specialist group within the CTN is the Imaging Standardisation Group: comprised of radiologists, medical physicists, pulmonologists (paediatric & adult), statisticians from CF centres across Europe & CTN & CF Europe representatives
- 3 specialist sub-groups are completing international guidance to promote standardisation of CT and MR imaging in CF, including harmonisation of existing protocols and key recommendations for practice

WHERE?

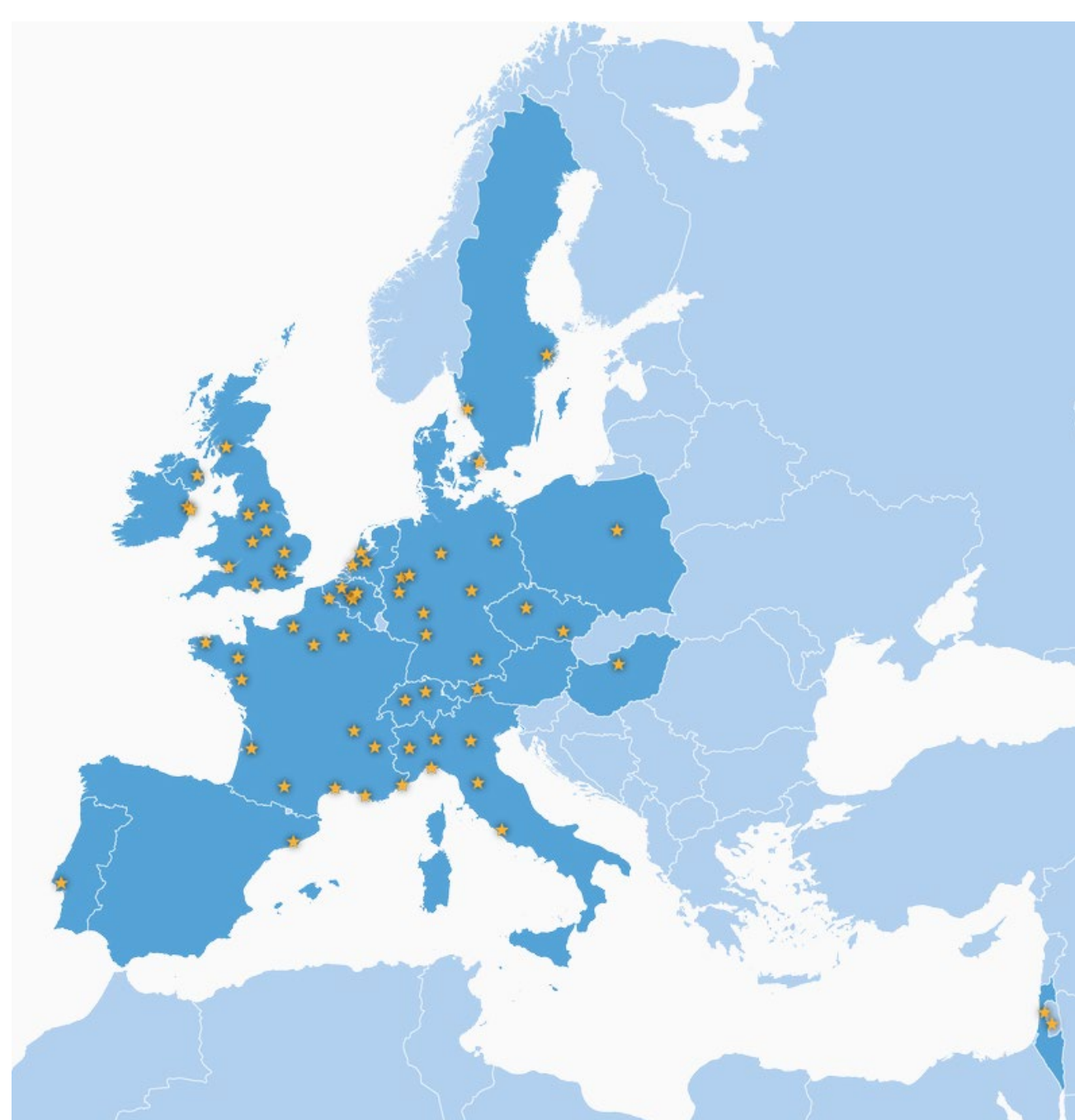


Figure 1 ECFS CTN Centres 2022-2023

WHAT?

- In 2022 we surveyed European CF centres & ERS colleagues to assess current European practice of thoracic CT and MR Imaging in CF

WHY?

- to promote standardisation of practice and sharing of knowledge in CT and MRI practice in CF, to improve the standard of care provided to people with CF

Abbreviations

ABPA allergic bronchopulmonary aspergillosis, CF cystic fibrosis, CT computed tomography, CTN Clinical Trial Network, ECFS-CTN European Cystic Fibrosis Society Clinical Trials Network, ERS European Respiratory Society, MRI Magnetic Resonance Imaging, NTM non-tuberculous mycobacteria, PwCF people with cystic fibrosis

Thank you

To all ECFS-CTN sites & ERS colleagues who participated in the surveys and all members of the ECFS CTN Imaging Special Interest Groups.

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Results

There is marked heterogeneity in the practice of CT and MR imaging across European cystic fibrosis centres.

CT Monitoring Strategies Sub-Group Survey Results:

- Survey: n=65 (n=43 paediatric, n=22 adult centre specialists)
- Assessed irradiation dose, early structural lung disease, indications, timing and frequency of CT imaging, harmonisation of imaging protocols, reporting of scan results, special indications, treatment response and how these centres/individuals see the future of CT in CF treatment and research

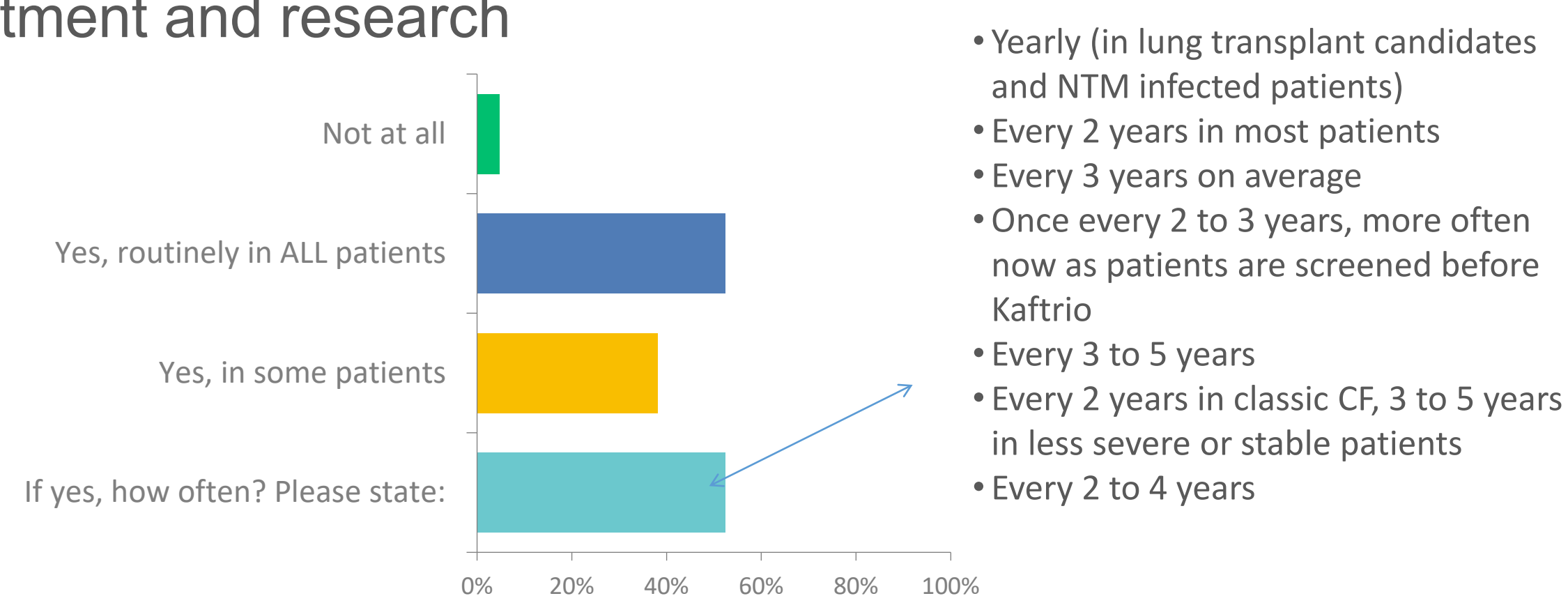


Figure 2 Frequency of use of Chest CT for CF Lung Disease in Adult Centres

Low Dose CT Sub-Group Survey Results:

- Survey: n=54 assessed current low dose CT protocols used across centres, including indications for chest CT in CF, dose reduction strategies used and perspectives/attitudes on dose optimisation
- 84% of radiologists questioned used dose reduction strategies at their centre
- Routine surveillance, investigation of complications and symptom assessment were the 3 most common indications for both adult and paediatric CT

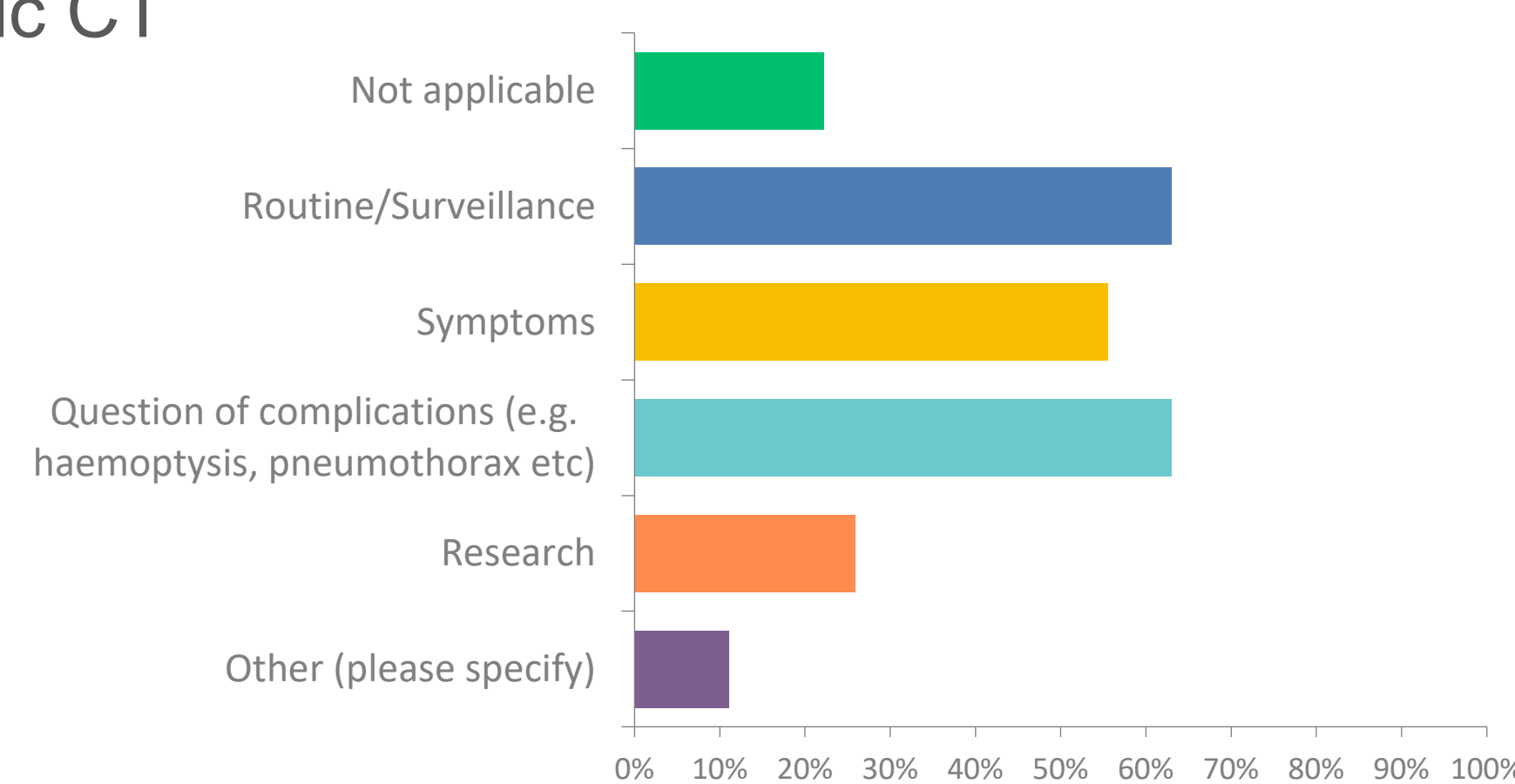


Figure 3 Indications for adult thoracic CT in PwCF

MRI Core Sets Sub-Group Survey Results:

- Survey: n=61 assessed current MRI practice across centres, including indications for chest MRI in CF
- Reviewed 10 European centres' adult and paediatric MRI protocols to define sequences which could be implemented in CF centres independently from magnetic strength and vendor
- MRI was used in all centres to assess both structural and functional changes
- Intravenous contrast and hyperpolarised gases are not routinely used
- Indications for use of MRI include routine examination, short-term follow up and for PwCF with severe disease and suspected bronchial artery hypertrophy

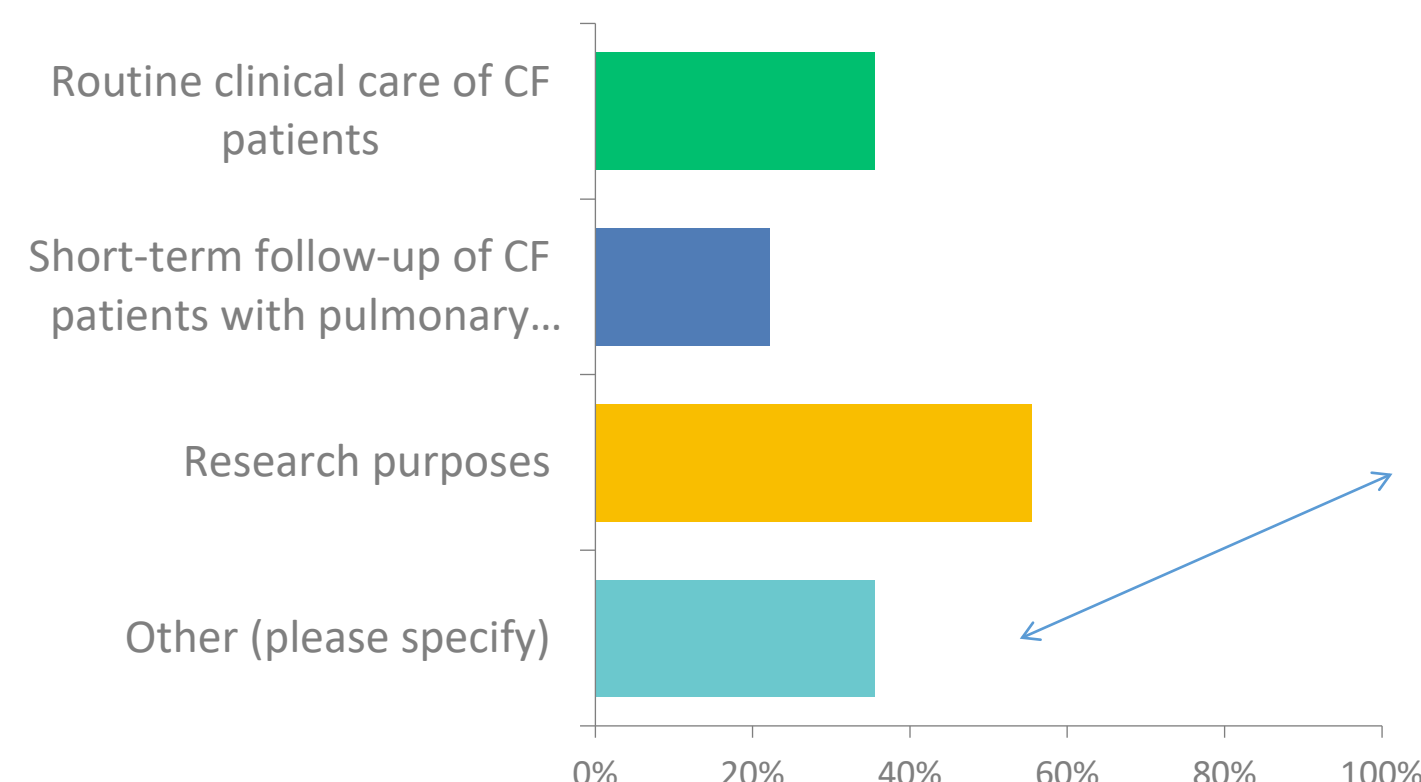


Figure 4 Indications for use of MRI

- Mainly for tumours of mediastinum and thoracic cage. We are on the way to implement the technique in other disease areas.
- E.g., when plain film equivocal and to justify radiation of CT.
- Only for the mediastinum.
- Research and occasional clinical use in specific situations (e.g., short term (monthly) follow up of fungal cavities on commencing antifungal therapy).
- suspicion of mediastinal tumours or heart issues.
- Solid lesions, central airway pathology.

What's next?

Each group is completing international guidance to promote standardisation of CT and MR imaging in CF:

CT Monitoring Strategies Group

- Guidance for Monitoring Strategies for Chest CT examinations in PwCF

Low Dose CT Group

- Guidance on dose reduction CT scanning in PwCF, including recommendations on patient safety

MRI Core Sets Group

- Guidance on recommended sequences which could be implemented in CF centres and studies independently from magnetic strength and vendor

Authors

Standardising European Imaging Practice: European Cystic Fibrosis Society – Clinical Trial Network Imaging Special Interest Groups

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