

Diversifying the Subject Cohorts in Total-Body PET Research: A Feasibility Study

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Introduction

Total-Body (TB) PET was installed at the EXPLORER Molecular Imaging Center (EMIC) at UC Davis in 2019. Our first study recruited 30 healthy subjects who underwent early dynamic and late static imaging with FDG to provide a basic understanding of the modality and a reference dataset for future studies. This initial population was not representative of the community that UC Davis Health serves. Such disparity is common and has been reported in the literature.

Purpose

- To initiate and evaluate an approach to improving the diversity of research cohorts at UCDCCC
- To improve the diversity of our healthy subjects TB-PET FDG reference dataset



Figure 1. uEXPLORER TB-PET scanner at EMIC



Figure 2. Early and heavily-used publicity shot featuring staff from EMIC

Methods

A new study was opened in which subjects were to be injected with 370 MBq FDG and scanned dynamically for 60 min, followed by 20 min static imaging at 90 min (matching the initial healthy subjects protocol) and 120 min (matching the EMIC clinical protocol). The recruitment goal was for 20 subjects specifically from minority racial/ethnic groups. The UCDCCC Community Advisory Group (CAB) was consulted regarding the existing publicity material, and it was noted that there was little representation from people of color in the material. In collaboration with the CAB, new material was devised and CAB members took part in mock TB-PET “scans” which were recorded on video and photographed; the CAB members were subsequently interviewed to describe their experiences. The material was then used in 11 local TV broadcasts, 32 radio broadcasts and 3 news articles. The number of subjects enquiring about the study and the number of subjects enrolled were recorded, together with the self-reported racial and ethnic background of the subjects.

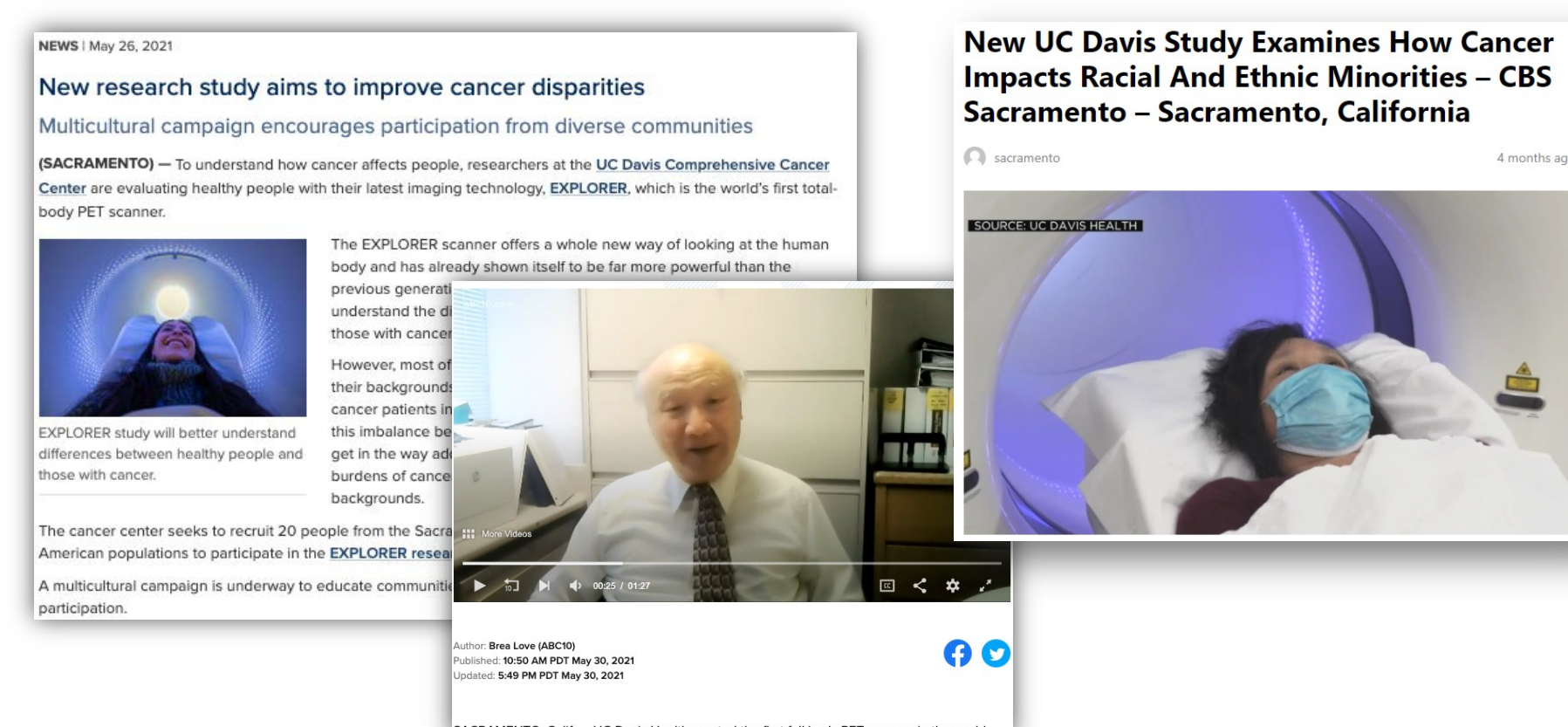


Figure 3. Screenshots of media used in the publicity campaign

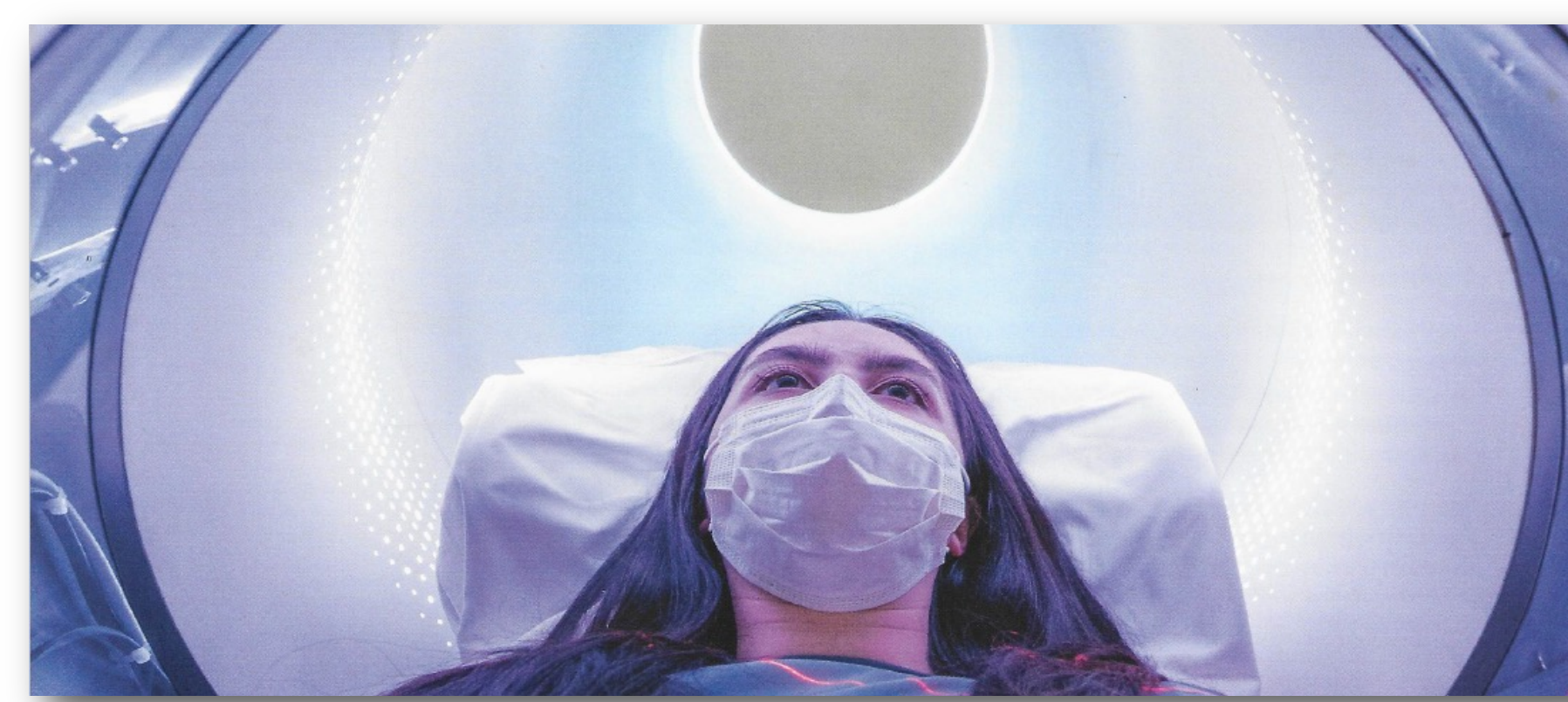


Figure 4. Publicity shot used after consultation with the CAB

Results

- 155 enquiries from interested volunteers were received
- 20 racial/ethnic minority subjects were recruited and underwent scanning
- Contact information for volunteers not recruited was stored for possible use in future studies
- Imaging data now in use as part of a diverse healthy subjects database for multiple studies in cancer, heart disease, fatty liver disease, arthritis, nutrition and metabolism science

Self-Reported Race/Ethnicity	Pre-outreach cohort	Post-outreach cohort
Asian	1	5
Native American	0	2
Black	0	7
White-Hispanic	1	6
White/non-Hispanic	15	0
Not reported/declined to state	13	0

Table 1. Self-reported race and ethnicity distribution for cohorts enrolled before and after outreach.

Example Images

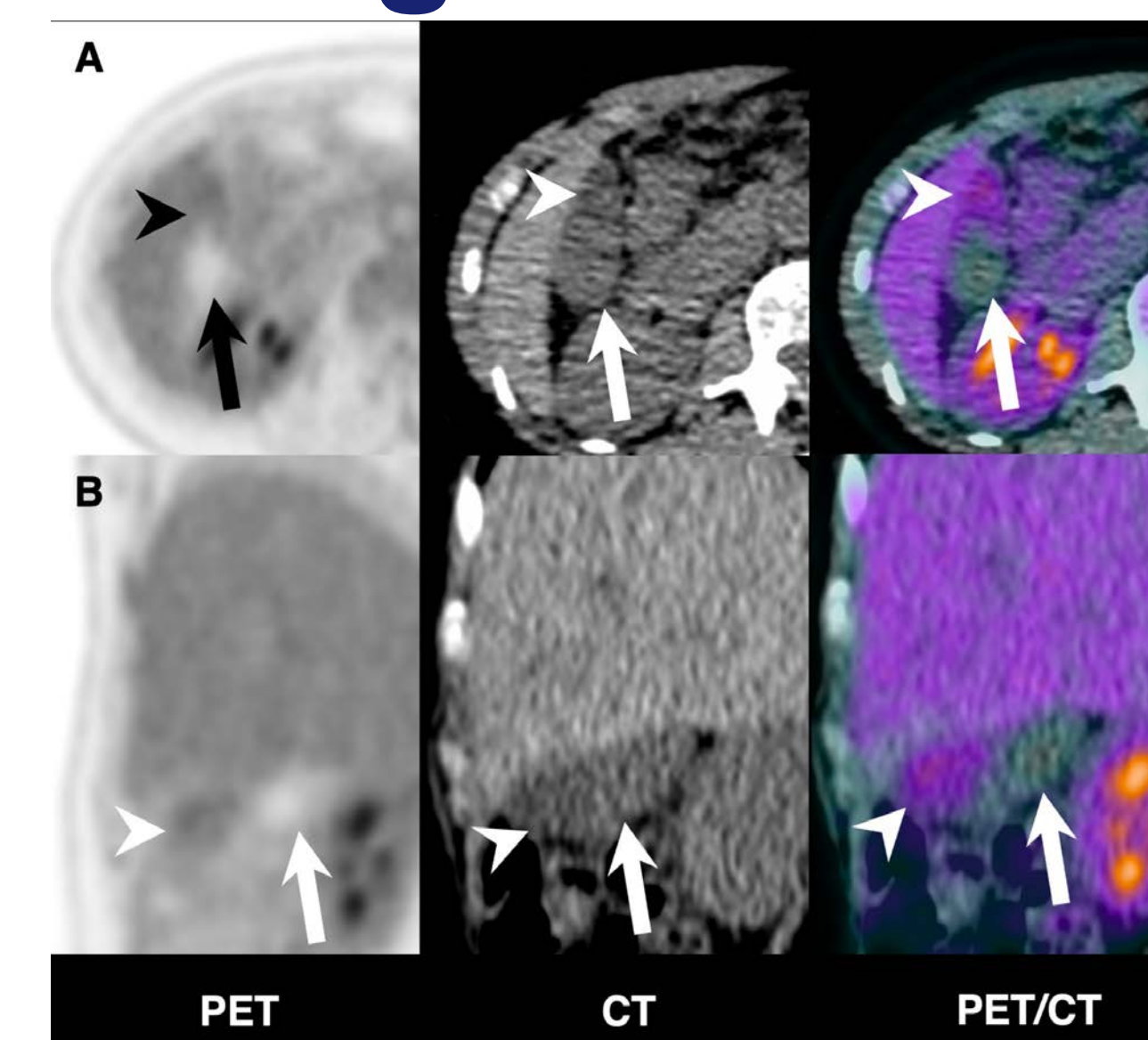


Figure 5. Axial (A) and sagittal (B) PET, CT and fused PET/CT images of a 61 y/o healthy female participant. Images show distribution of ¹⁸F-FDG uptake in the gallbladder: one portion shows uptake with lower attenuation on the corresponding CT (arrowhead), while the other portion shows no uptake and higher attenuation on the corresponding CT (arrow). These findings suggest the presence of different luminal content (gallbladder “sludge”). These data are part of a broader study of gallbladder uptake (Calabro et al., submitted)

Example Images

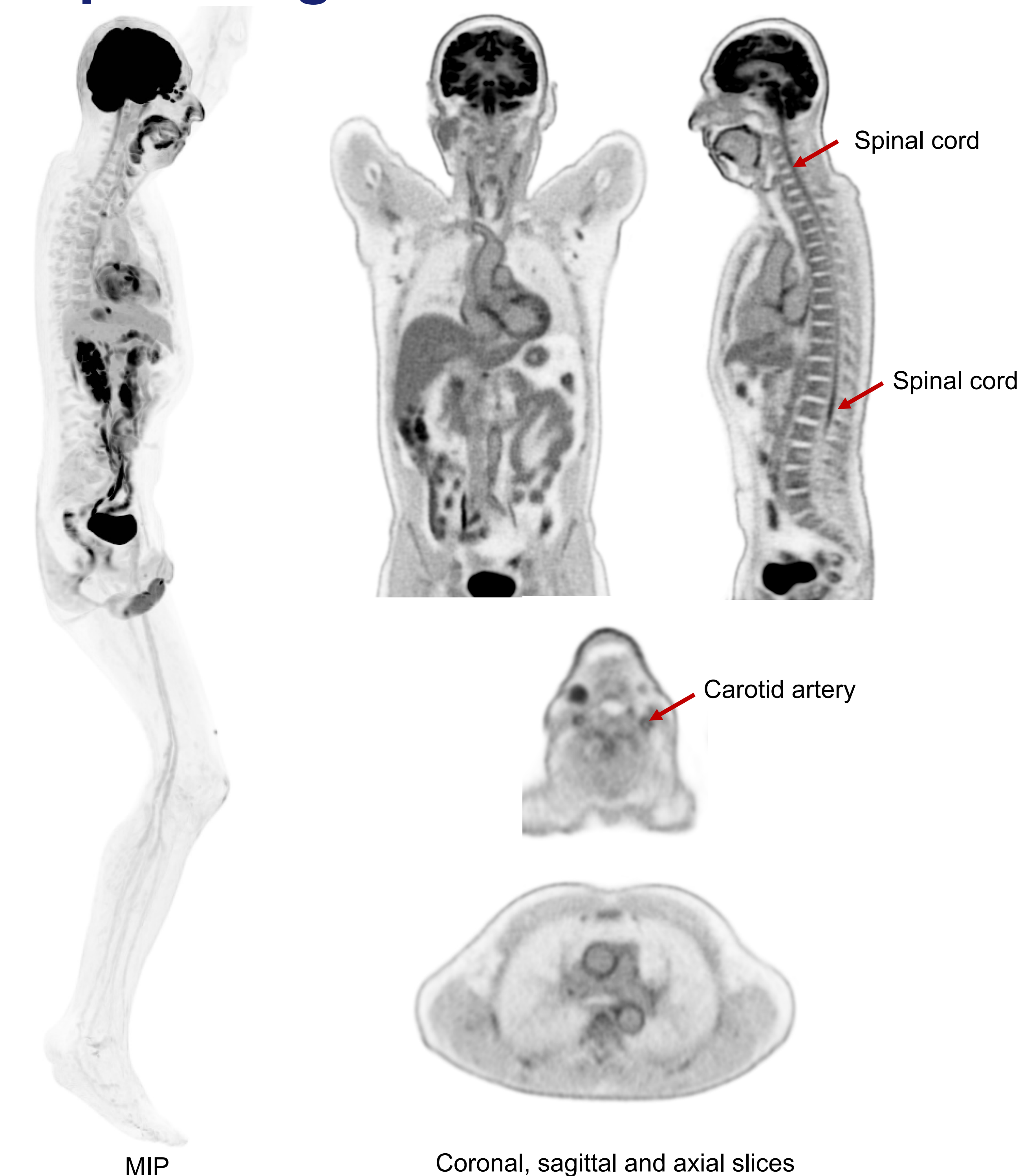


Figure 6. 67 y/o M, 69.5 kg, 395 MBq injected. There is excellent delineation of the spinal cord and the walls of the major vessels. The walls and the lumen of the carotid arteries are also clearly seen.

Summary

- Early study cohorts did not represent the diversity of our community, replicating research recruitment patterns reported in the literature
- We engaged the UCDCCC Community Advisory Board to develop an explicit, informed and targeted approach to improve cohort diversity; this effort was successful
- The approach used can be replicated with a view to improving research cohort diversity in other settings

Acknowledgements

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