CYDAR EV
A new system for automated 3D overlay

Tom Carrell MD
Consultant Vascular Surgeon, London, UK
Co-Founder, CEO Cydar Ltd

Financial disclosures
- Co-founder, shareholder and CEO of Cydar Ltd
- Co-inventor of intellectual property (inc. US patent 14/382,999 allowed)

Regulatory statement
CYDAR EV SOFTWARE
CE Mark November 2015
• Now available in the UK and European Union
Not FDA cleared
• Not currently available for sale in the US
• Expected early 2016

What use are overlays?
Help better understand 3D anatomy by overlaying pre-operative CT information onto X-ray fluoroscopy images

How could overlay systems be better?
No need to change your X-ray set
• It should work whether you have a fixed X-ray set, mobile C-arm or hybrid OR
• You do not need to invest in expensive equipment and slow installation
Simple to operate
• No technical expertise (physicians, radiographers, technicians)
• No need to take extra images (rotations or lateral X-rays)
Fully automatic
• No manual alignment or adjustment needed
Accurate
• Adjust when the patient is lying in a different posture than when they had the CT
• Correct for patient movement

A new approach
CYDAR EV SOFTWARE
• Fixed or mobile
• Flat panel or image intensifier
• HIPAA compliant
• ISO 27001 certified
• ISO 13485 certified
Intuitive, simple workflow

Upload CT scan in advance of the X-ray guided procedure

3D overlays start automatically when X-ray images appear

The software watches the X-ray fluoroscopy

Upload CT scan in advance of the X-ray guided procedure

3D overlays start automatically when X-ray images appear

Works with all types of X-ray set

- Mobile and fixed
- Flat panel and image intensifier detectors
- Analog and digital video formats

Searches for at least two vertebrae

Fully automated

Corrects for X-ray set, table and patient movement

5-10 seconds
Accuracy

Accuracy of vertebral match
- 0.21mm mean (max 0.62mm)
- 0.24º mean (0.69º max)

Note, be aware of:
- Cardiac movement cycle
- Respiratory movement
- Straightening of angulated anatomy
- Disease progression


Clinical trial

Multi-centre UK trial
- Guy’s and St Thomas’, Royal Free, Cambridge University and Frimley Park NHS Hospitals
- 109 Patients
- 288 hours of 3D overlays

Robustness
- No false overlays out of 15,331 overlays displayed
- 100% positive predictive value (95% CI > 99.8%)

Reliability
- 99.94% uptime

Speed
- 8.395s mean refresh time

Clinical effects

3 fenestrated repairs. Largest subgroup (n=9)
- 60 minute (60%) reduction in screening time (p=0.014)
- 167 ml (40%) reduction in iodinated contrast (p=0.018)
- 70 minute (21%) reduction in procedure time (p=0.06 NS)
- Same effects as observed in 3D overlay literature

Thank you

Further Information

Tom Carrell
info@cydarmedical.com
www.cydarmedical.com