Evaluating the effectiveness of home spirometry for lung transplant patients

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Introduction and methods

- Lung transplant is a treatment option for end stage lung diseases.
- Following transplantation patients are regularly seen in clinic, where spirometry is used to see if there is a problem with the transplanted lung(s).
- During COVID-19 NHS England supplied remote spirobank spirometers to 164 lung transplant recipients and readings were sent to the transplant centre via the patient mpower app.
- A service evaluation was then performed 6-12 months following implementation of the programme.

Results

1. Home spirometry results are comparable to clinic spirometry

- FVC and FEV1 results were compared between clinic and those taken at home. (Figure 1) R^2 values were: 0.69 (FVC) and 0.59 (FEV1).

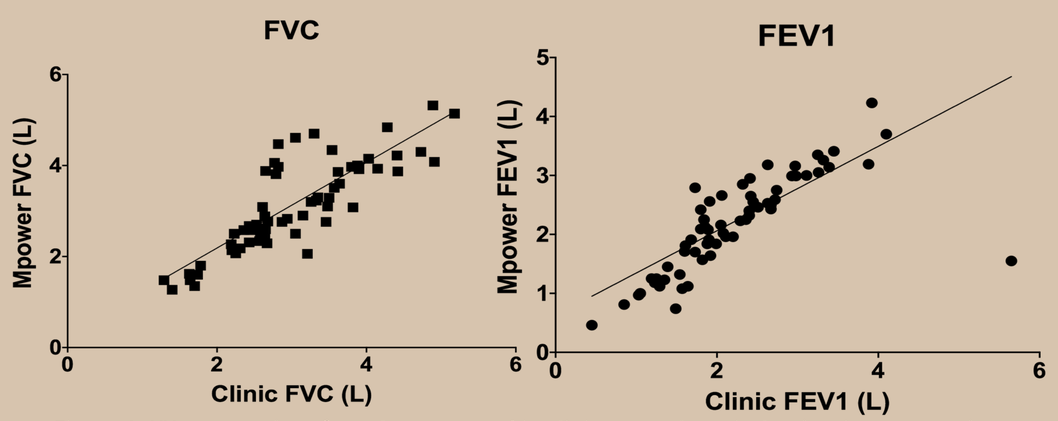


Figure 1. XY scatter plot of results measured in clinic versus by spirobank spirometer at home.

2. Compliance with home spirometry is high

- 67% of patients reported that they measured their spirometry at least once per week. (Figure 2)

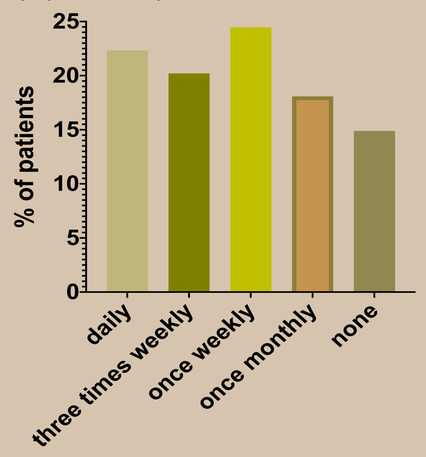


Figure 2. Bar graph showing the frequency of use as reported by the patients.

- A similar proportion (66%) of results were also seen in the app by the reviewing doctors.

3. Home spirometry was liked by patients

- 83% of patients rated the spirometer at least 8/10 on a numerical rating scale (Figure 5)
- Key features they liked were: ease of use and compactness. (Figure 4)

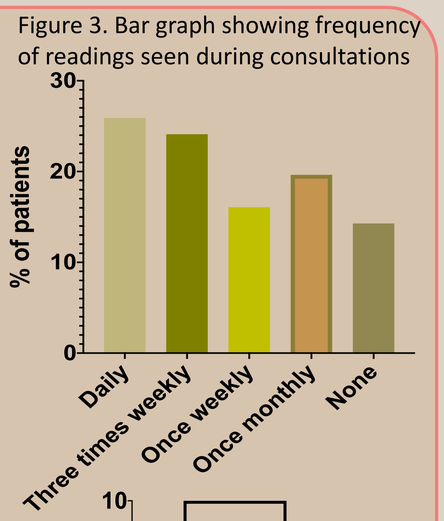


Figure 3. Bar graph showing frequency of readings seen during consultations

Figure 4. Bar graph of attributes patients liked about the home spirometer

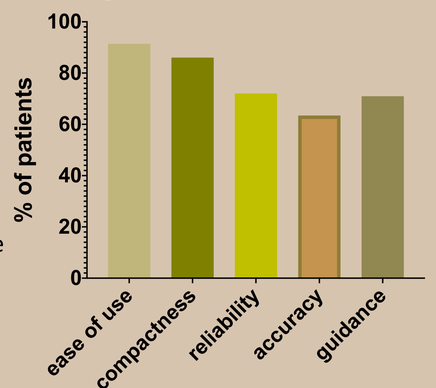
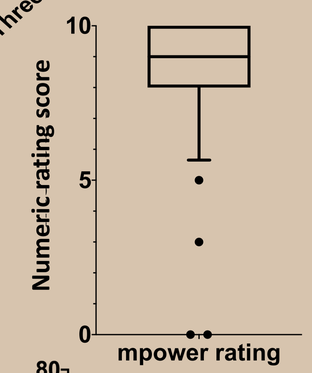


Figure 5. Box and whisker plot showing patient numeric rating scale score for the home spirometer



4. Home spirometry was useful in 79% of consultations

- Clinical staff found home spirometry helpful (Figure 6). Home spirometry removed the need for clinic spirometry in 60% of case. However other treatment decisions were not altered e.g. length of follow up (Figure 7)

Figure 6. Bar graph showing proportion of consultations where home spirometry data was useful

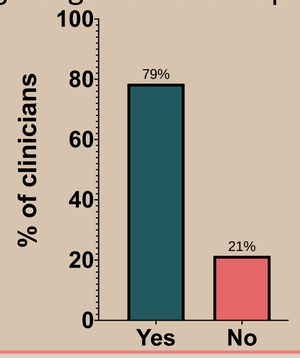
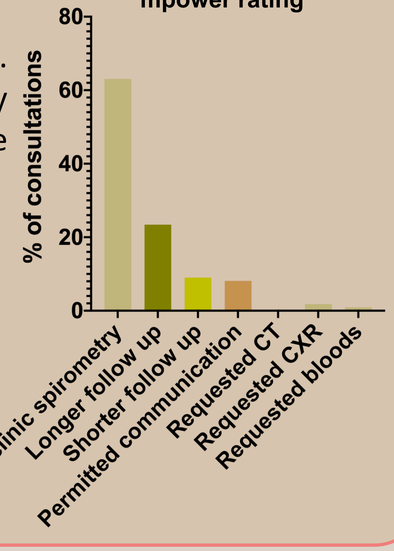


Figure 7. Bar graph showing uses for home spirometry data in clinical management.



Conclusion

- **Mpower home spirometry is accurate, used on a regular basis and was well liked.**
- **It may remove the need for regular clinic spirometry, but other impacts on care still have to be documented.**