Greater Manchester Cancer Conference 2022

REMOTE MONITORING FOR PROSTATE CANCER

Osborne, J. Riley, A. Tselos, A. Todd, S. Maddnineni, S.

BACKGROUND:

In 2019 Frankland et al published the results of their remote surveillance programme for prostate cancer (Frankland, et al., 2019), encouraging urology departments to shift to remote telephone appointments for patients on prostate cancer follow-up. In Greater Manchester, virtually all prostate cancer clinics are now by telephone appointment only. However, prostate cancer patients should have their prostate-specific antigen (PSA) levels tested every 3-6 months (NICE, 2019) and, patients must currently attend their GP surgery or hospital in order to provide a serum sample for PSA testing. **This is a departure from the remote model, is inconvenient and exposes patients to infection risks.**

RESULTS:

- **0.1µg/L** Lower Limit of PSA Quantitation
- **4 days** Stability at Room Temperature
- **30µL** Sample Volume
- **-0.2%** Mean Difference from Serum
- **97.2%** Overall Participant Satisfaction
- Development of robust extraction protocol

AIMS:

To make prostate cancer monitoring truly remote, patients must be able to provide a blood sample for PSA testing at home. Previous studies used dried blood-spot cards, which can be difficult to use and are prone to sampling errors (Hoffman, et al., 1996). New microsampling technology may circumvent these issues (Marshall, et al., 2020).

This study therefore aims to answer the following questions:

1. Do finger-prick samples give comparable PSA results to traditional samples?
2. Are patients happy and able to take their own samples using this kit?

THE LAST PIECE OF THE PUZZLE: CREATING A FULLY REMOTE SERVICE

Current model:

At-home

In-person

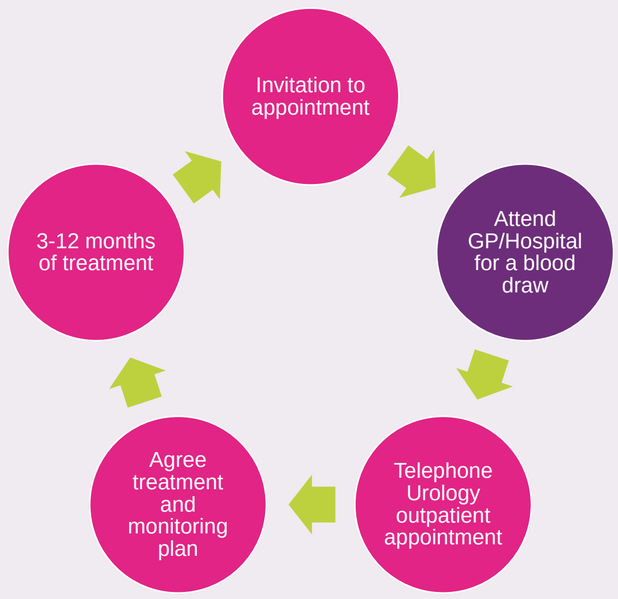

Figure 1.1 – The current model for prostate cancer monitoring in GM

Proposed model:

At-home

In-person

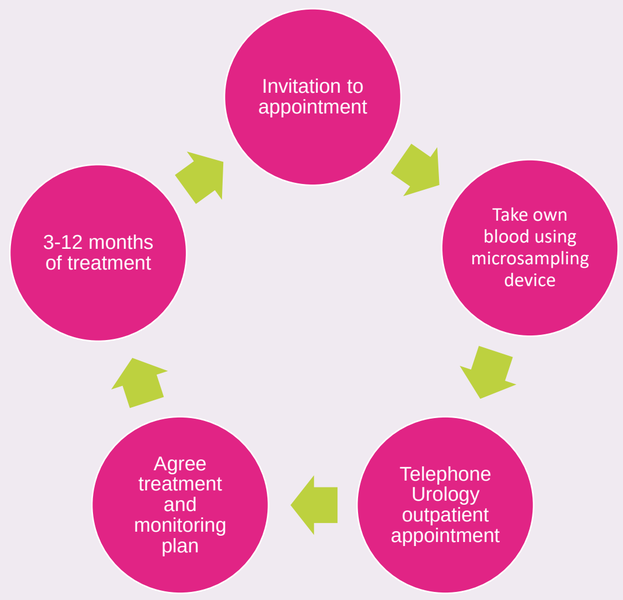

Figure 1.2 – The proposed model for prostate cancer monitoring in GM

MICROSAMPLE VS. PSA RESULTS:

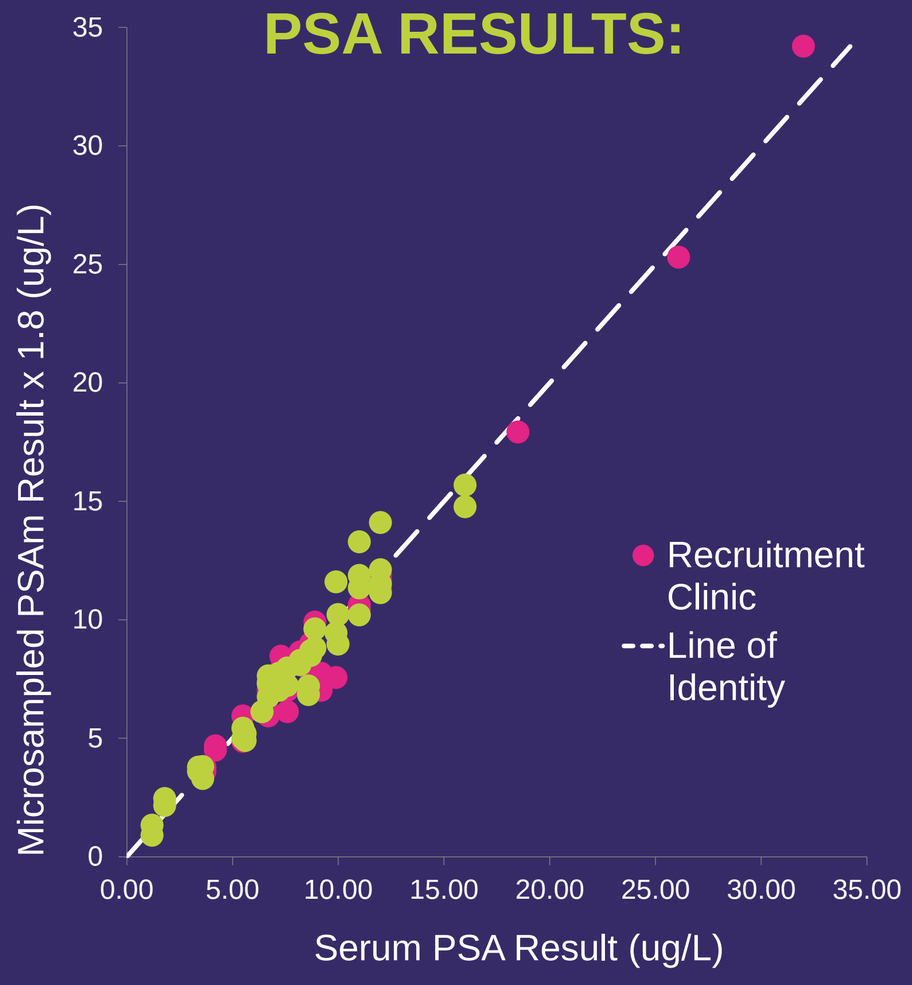

Figure 2 – PSA results comparison: Serum vs. Microsamples

METHODS:

25 prostate cancer patients took part in our pilot project at Bolton NHS Foundation Trust. Participants were introduced to the microsampling kits. Each provided two 30µL samples and a venous serum sample. They completed a satisfaction survey after sampling was complete. 3 months later, they received a microsampling kit in the post, collected their own sample at home and returned them to the laboratory for analysis, again filling out a satisfaction survey. Satisfaction surveys included 5 simple statements, with participants scoring their agreement with them from 0 (strongly disagree) to 4 (strongly agree).

For reproducibility and stability studies, anonymized paired serum and EDTA samples were obtained from Royal Bolton Hospital. Whole blood was transferred onto 30 µL evaluation tips. For stability studies, EDTA samples were collected onto 5 Mitra devices each. Baseline samples were allowed to dry for 3 hours at room temperature before extraction, followed by 1, 2, 3 and 4 days at room temperature. All PSA testing was performed on an automated immunoassay analyser using the Elecsys Total PSA Sandwich Immunoassay kit.

NEXT STEPS:

An expansion of the project out into the Northern Care Alliance is planned for late 2022. We plan to recruit a further 75-150 patients to confirm our initial findings and include multiple laboratories and rounds of at-home testing in the analysis.

DISCUSSION:

Of the 50 Mitra samples collected at recruitment, 22 were visibly under-sampled and were excluded from this stage of analysis. 3 of the 25 patients were excluded, as both of their Mitra samples were visibly under-sampled. These numbers improved during the at-home sampling phase, with only 4 samples excluded for visible under-sampling and no participants excluded entirely. Initial results show excellent comparison with serum results down to 0.1µg/L PSA – this method may therefore be suitable for those who have a PSA value above this level, but may not be suitable for those who have undergone a radical prostatectomy.