Statistical Analysis Plan

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Protocol Title	Evaluating the efficacy and comfort of the PureWick™ Male External Catheter against a Comparator in Healthy Volunteers
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Approval

Individual or Function	Name	Signature/Date
Statistician (Author)	Yanchang Zhang	This document is signed electronically in the eTMF system
Project Manager	Ajesh Raju	This document is signed electronically in the eTMF system
Statistician (Reviewer)	Dilrukshi Hewage	This document is signed electronically in the eTMF system
Clinical Affairs	Kirsten Hammitt	This document is signed electronically in the eTMF system

Contents

1 Introduction

1.1 Background and Rationale

The purpose of this study is to provide clinical evidence to compare the effectiveness and comfort of PureWick™ Male against a comparator for non-invasive urine output management in patients with varying male anatomy.

1.2 Objectives

1.2.1 Primary Objectives

To assess the performance of the PureWick™ Male (System) against an established comparator (Stryker/ Sage PrimoFit™).

1.2.2 Secondary Objectives

- To assess the performance of the PureWick™ Male (System) in patients that are unable to use traditional sheath style condom catheters.
- To assess participant comfort after using the MEC.
- To assess ease of use by HCP in placing the MEC.

2 Study Description

2.1 Study Design

This is a Prospective, Randomized, Crossover, Single-blind, Single Center Healthy Volunteer Study conducted over 1 day, with 2 voids using the PW Male external catheter vs. comparator Sage PrimoFit™. This study is designed to assess the performance, comfort, and ease of use of the PW Male external catheter as compared to the comparator product

2.2 Study Population

Adult male healthy volunteers with a target of 50% of subjects in each of the following cohorts:

- Cohort A: Non morbidly obese men: BMI <40
- Cohort B: Morbidly Obese men: BMI ≥40

Inclusion Criteria:

- Adult Male Patients ≥18 years old
- Male anatomy at time of enrollment
- Ability to speak and understand English
- Willing to comply with all study procedures in the protocol
- Able to independently void urine
- Provision of signed and dated informed consent form

Exclusion Criteria:

- Urinary incontinence which does not allow the subject to spontaneously void
- Frequent episodes of bowel incontinence
- Has Urinary Retention
- Has any irritation, wound, open lesion, at the application site, on the genitalia, perineum, or sacrum
- Recent surgery of the external urogenital tract, penis, or pubic area
- Not able to comply with study procedures independently without required assistance
- Any other condition that, in the opinion of the investigator, would preclude them from participating in the study

2.3 Randomization and Blinding

Subjects will be randomized using a block size of 4 and using a 1:1 ratio to one of the two treatment sequences. Subjects randomized to Sequence 1 will use PureWick MEC first, followed by Sage PrimoFit. Subjects randomized to Sequence 2 will use Sage PrimoFit first, followed by PureWick MEC. Randomization will be stratified by cohort. Cohort A consists of non-morbidly obese subjects (BMI < 40). Cohort B consists of morbidly obese subjects (BMI ≥ 40). The randomization schedule is created using R (R Core Team, 2021). Randomization seed is specified in the R script.

The investigational site will receive a set of randomization envelopes for each cohort that are numbered in sequential order. Within each randomization envelope, a treatment sequence assignment card will be enclosed, containing the sequence number and device to be used for each void. The randomization envelop are to be opened in sequential order (as noted on the envelop) and are to be opened only when all inclusion/exclusion criteria are met.

The Investigator and Sponsor will know which device the participant is being treated with at any given time. Participants will remain blinded to treatment order until the study is complete.

2.4 Sample Size

Using a two-sided paired t-test at significance level of 0.05, a sample size of 44 evaluable subjects provides 90% power to detect a mean paired difference in capture rate that is half of the standard deviation of the paired difference. For example, if the standard deviation of paired difference in capture rate is 10%, a sample size of 44 provide 90% power to detect a mean paired difference of 5% (PASS 2019). Approximately 50 subjects will be enrolled to obtain 44 evaluable subjects.

2.5 Interim Analyses

Not applicable.

2.6 Study Procedure

See protocol Section 1.2 and Section 7.

2.7 Endpoints

2.7.1 Primary Endpoints

Primary endpoint is capture rate following void (captured as % of urine captured by device and collected in canister, measured by weight), PureWick™ Male (System) compared with Stryker/ Sage PrimoFit™.

2.7.2 Secondary Endpoints

Secondary Endpoint with Hypothesis Test:

capture rate following void (captured as % of urine captured by device and collected in canister, measured by weight), PureWick™ Male (System) compared with Stryker/ Sage PrimoFit™, in subjects that are unable to use traditional sheath style condom catheters. This hypothesis-testing is performed conditional on the success of the primary hypothesis-testing.

Secondary Endpoints without Hypothesis Test:

- Overall Comfort score on a 5-point Likert scale (brief questionnaire)
- Ease of use score on a 5-point Likert scale (brief questionnaire)

2.8 Acceptance Criteria

Successful rejection of the Null hypothesis will provide evidence to support the superiority of PureWick™ Male (System) over the comparator device.

3 Intended Statistical Software and Data Information

3.1 Intended Statistical Software

SAS Version 9.4 (SAS Institute, Cary, NC) or above will be used to perform analyses and generate outputs.

3.2 Data Information

Analysis datasets and a document outlining the specification of analysis datasets will be stored in a version-controlled environment.

4 Analysis Population Set(s)

4.1 Population Definitions

The following populations are defined:

Population	Description
Enrolled	All participants who sign the ICF.
Intent-to-Treat (ITT)	Enrolled and randomized participants.
Per-Protocol	ITT subjects who are without major protocol deviation.
ITT Subpopulation	ITT subjects who are deemed unable to use traditional sheath style condom catheters.

ITT population will be used for the primary endpoint analysis. ITT subpopulation will be used for the secondary endpoint *with* hypothesis test. Per-protocol analyses may be performed as a sensitivity analysis.

5 Statistical Analysis/Calculations

5.1 Derived Variables

- Subject who are deemed unable to used traditional sheath style condom catheters:
  Answered "No" to "Is the participant's anatomy compatible with traditional sheath-style condom catheters?" on Case Report Form (CRF) page entitled Professional Anatomical Compatibility.
- Capture rate:
  Captured urine weight / (captured urine weight + leaked urine weight), where
  - Captured urine weight is defined as canister final weight (g) - canister starting weight (g), and
  - Leaked urine weight is defined as pad final weight (g) - pad starting weight (g).

  A void of which (captured urine weight + leaked urine weight) < 10 g is considered not evaluable for the purpose of analyzing primary endpoint and secondary endpoint with hypothesis-testing.

5.2 Analysis Methods

5.2.1 General Considerations

Study-wise Type I error is controlled using the Fixed Sequence method. The primary endpoint and a secondary endpoint are tested sequentially. The secondary hypothesis will be carried out, only if the primary hypothesis test is successful. Otherwise, the test for the secondary endpoint is considered exploratory.

5.2.2 Primary Endpoint

The primary endpoint will be evaluated against the following hypotheses:

H_0: Capture rate of PureWick™ Male (system) = Capture rate of established comparator (Stryker/ Sage PrimoFit™)
H_1: Capture rate of PureWick™ Male (system) ≠ Capture rate of established comparator (Stryker/ Sage PrimoFit™)

A two-sided paired t-test will be used to test the hypotheses and p-value will be derived. A p-value < 0.05, combined with a capture rate in favor of PureWick™, indicates that PureWick™ is superior to PrimoFit™ in terms of urine capture.

An exploratory analysis will be performed using regression, where subject may be included as the random effect, and period, sequence, treatment may be included as fixed effects.

5.2.3 Secondary Endpoint with Hypothesis Test

This secondary endpoint will be evaluated against the following hypotheses, in the ITT Subpopulation:

H_0: Capture rate of PureWick™ Male (system) = Capture rate of established comparator (Stryker/ Sage PrimoFit™)
H_1: Capture rate of PureWick™ Male (system) ≠ Capture rate of established comparator (Stryker/ Sage PrimoFit™)

A two-sided paired t-test will be used to test the hypotheses and p-value will be derived. A p-value < 0.05, combined with a capture rate in favor of PureWick™, indicates that PureWick™ is superior to PrimoFit™ in terms of urine capture, in patients who are unable to use traditional sheath style condom catheters.

An exploratory analysis will be performed using regression, where subject may be included as the random effect, and period, sequence, treatment may be included as fixed effects.

5.2.4 Secondary Endpoint without Hypothesis Test

Summary statistics will be provided for

- Overall Comfort score on a 5-point Likert scale (brief questionnaire) for each device, and
- Ease of use by HCP in placing the MEC (brief questionnaire).

6 Summary of General Study Data

Appendix 1 includes table and listing shells for general study data.

7 Safety Analysis

Appendix 1 includes listing shells for AE and SAE.

8 Interim Analysis Plan

Not applicable.

9 References

None.

10 SAP Revision History

Version Number	Rationale for Change	Section or Page Affected	Description of Change
1.0	Original SAP		

11 Appendix

11.1 Appendix 1 – Tables, Figures and Listing Shells