

# Development and Pilot Testing of a New Bladder Diary Format: Phase 1

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## Abstract

**Introduction:** The primary aim of this project was to develop a bladder diary that was user-friendly and included detailed information consistent with the ICS (International Continence Society) definition of a urinary diary. The decision to formulate a new bladder diary was made in response to poor completion rates and feedback indicating that it was poorly understood. The secondary aim was to evaluate the success of a 3-day vs a 2-day diary in terms of completeness.

**Methods:** A convenience sample size of 24 diaries was chosen because this equated to 6 urodynamics clinic sessions. An initial retrospective audit demonstrated that completeness was a clinical issue. A committee comprising expert clinicians was established to gain consensus and formulate new diary content and format.

**Results:** The new diary was audited and showed a significantly higher completion rate than the old format. Phase 3 involved trialing a 3-day diary after content validity had been achieved.

**Conclusions:** This new diary format, content and duration are in line with recommended best practice guidelines and provide clinicians with a better tool to assess patients with lower urinary tract symptoms. The 3-day duration was proved to be interpretable and reliable by an audit. This pilot project shows that developing a user-friendly format, improving patient education and including a sample diary resulted in decreased completion and compliance issues.

**Key Words:** urinary bladder, urinary incontinence, self report, patient compliance, New Zealand

The bladder diary has been cited as the most valuable tool to assess urinary incontinence.<sup>1</sup> Countless groups have reinforced the cost-effectiveness and usefulness of bladder diaries, highlighting the many benefits.<sup>2-5</sup> Examples include objective feedback during behavioral training, assessment of void intervals and initial baseline lower urinary tract function, and diagnosis of specific problems such as nocturnal polyuria or excessive fluid intake in addition to evaluation of

treatment success in detrusor overactivity, stress urinary incontinence and bladder outflow obstruction.<sup>6</sup>

The primary aim of this pilot project was to develop a bladder diary that was user-friendly and included detailed information consistent with the ICS definition of a urinary diary. The impetus for this arose from regularly receiving incomplete diaries in addition to feedback from patients that they did not understand the format. The secondary

Submitted for publication April 7, 2015.

No direct or indirect commercial incentive associated with publishing this article.

The corresponding author certifies that, when applicable, a statement(s) has been included in the manuscript documenting institutional review board, ethics committee or ethical review board study approval; principles of Helsinki Declaration were followed in lieu of formal ethics committee

approval; institutional animal care and use committee approval; all human subjects provided written informed consent with guarantees of confidentiality; IRB approved protocol number; animal approved project number.

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aim was to evaluate the response of a 2-day vs a 3-day diary in terms of completeness. This phase was performed after format and content had been finalized and validated through an audit.

The Counties Manukau population has 3 distinct characteristics that are unique compared to those of other New Zealand district health boards. 1) The population tends to be on average younger than the national average. 2) It has the highest proportion of Maori individuals, the highest number of Pacific Island peoples and the second highest number of people who identify as an Asian ethnicity compared to the national average.<sup>7</sup> 3) Counties Manukau includes proportionally many more people living in the most deprived section of the population than the national average.<sup>8</sup> This results in a complex population. The community that we serve has higher health needs, higher ethnic diversity, and generally a lower level of health literacy and financial equity than the rest of the country. Our population is also the second fastest growing population compared to those of other district health boards nationwide.<sup>7</sup> Therefore the development of a user-friendly diary was imperative.

## Materials and Methods

The project was divided into 3 phases. Phase 1 entailed an initial audit of the current bladder diary format and content aimed to identify how complete they were. A retrospective audit was performed of the previous 6 urodynamics clinic patient diaries. This determined a convenience sample size of 24 patients. This audit sought to identify whether the current bladder diary was well completed and captured enough detailed information to be used as a valuable objective assessment tool. Patients included in the audit were all those who attended this clinic from June 2013 to December 2013. This method provided a snapshot of the current completeness of diaries as a baseline.

A purposive sampling method was used for the second and third phases. Purposive sampling is a nonprobability sampling method involving the deliberate selection of a group of individuals for study based on predefined criteria.<sup>9</sup> Audit inclusion criteria that were applied and incorporated included adult patients of either gender who were required to complete a bladder diary and who attended the urology or gynecology outpatient service at Counties Manukau Centre for a urodynamics procedure or who were patients in the community who required continence assessments.

The second phase of this project was to develop a diary format and content that met with agreement from a committee comprising expert clinicians working across urology, female health and community continence services. This collaboration ensured the provision of a tool that was

meaningful to all services that use bladder diaries to assess lower urinary tract symptoms.

The same duration of a 2-day diary was maintained to retain validity and reliability when comparing results from the initial audit to those of the postinterventional audit. For consistency the same number of patient diaries was also audited retrospectively. This aimed to validate conclusions of the effectiveness of the intervention by achieving the desired outcome of improving completion rates. At this stage the question of diary duration had not been addressed as it was decided to address duration in the third phase.

The third phase centered on the optimal number of days. After the format and content had been agreed on and successfully trialed during phase 2 a 3-day diary was compared to the 2-day diary in terms of completeness. This sought to align the newly developed diary with evidence-based literature recommending a diary duration of at least 3 days.<sup>1,4,10,11</sup> The sample of patients analyzed in this phase included those in the community undergoing continence assessments. The inclusion of this group nullified any potential selection bias since the group was representative of patients who would be asked to complete a bladder diary.

## Results

In each phase 24 diaries were audited. The table lists participant gender, age and urodynamic diagnoses for each audit phase. Median age was 56 years (range 31 to 84) in the old diary group, 71 years (range 24 to 83) in the 2-day diary group and 54 years (range 35 to 80) in the 3-day diary group. More males were represented in the first 2 phases. Each group had a wide distribution of diagnoses that affected men and women. Phase 3 (3-day diary) included 5 of 24 patients (20%) who underwent continence assessments as opposed to a urodynamics procedure.

The initial data demonstrated that completeness was a clinical issue with 33% of diaries completed. The initial

**Table.**  
Study population characteristics

	Diary		
	Old	2-Day	3-Day
No. male/female	21/3	15/9	9/15
Median age (range)	56 (31–84)	71 (24–83)	54 (35–80)
Urodynamic diagnosis:			
Stress urinary incontinence	4	4	5
Detrusor overactivity	5	9	5
Bladder outlet obstruction	4	3	2
Detrusor overactivity + bladder outlet obstruction	7	3	2
Other	4	3	5
Detrusor overactivity + stress urinary incontinence	0	1	0
None	0	1	5

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