Compliance with the prescribed exchanges in peritoneal dialysis (PD) is important to dialysis success. In this study, we used measurement of supply inventories to determine compliance by PD patients with the prescribed bag changes.

We performed home supply inventories by telephone with 30 stable PD patients. Patients who performed at least 90% of prescribed exchanges were considered compliant.

Mean age of the patients was 52.8 years. Seven of the patients (23%) had diabetes, and 19 (63%) were women. Peritoneal dialysis was the first choice of renal replacement therapy in 19 patients (63%); the other 11 (37%) had been allocated to PD. Of the 30 patients, 21 (70%) were compliant, and 9 (30%) were not. Among patients choosing PD, 74% were compliant; among those allocated to PD, compliance was found to be 64%. Furthermore, of the compliant patients, 67% had opted for PD and only 33% had been allocated to PD. In the noncompliant group, 36% had opted for and 44% had been allocated to PD. Weekly Kt/V was 1.9 for compliant patients and 1.53 for noncompliant patients. The peritonitis rates in the two groups were similar (0.5 episodes per patient–year for compliant patients and 0.4 episodes per year–patient for noncompliant patients).

Participation in the decision-making process improves compliance. Telephone calls about supply inventories is a simple method of monitoring compliance. Developing interventions to enhance compliance in PD patients is a challenge to nurses and to the renal team.

Key words
Compliance, CAPD, CCPD, home visits

Introduction
The issue of noncompliance in hemodialysis is well recognized, but in peritoneal dialysis (PD), no simple, reliable method exists to detect the problem (1). Several different patterns of noncompliance can be detected: for example, omitting bag exchanges or reducing the fill volume, number of cycles, or time.

According to the Brazilian Society of Nephrology, of the 58,989 registered dialysis patients in Brazil, about 90% are treated with hemodialysis because few units give patients the opportunity to choose their own dialysis modality. The main reasons for patients undertaking continuous ambulatory peritoneal dialysis (CAPD) are vascular access failure, morbidity during hemodialysis, and distance from a dialysis unit.

Home visits are designed to reduce hospitalization and infection rates, to reinforce learning, to assess the patient’s home and procedures, and to nurture the link between patient and caregivers. Home visits are offered only by approximately 10% of the nurses working in dialysis units, mainly because of lack of financial support, making control of the bag supply very difficult.

In PD, compliance with treatment is important for achieving adequate dialysis. The amount of dialysis actually delivered to a patient depends on the level of patient compliance with the prescribed treatment. In this study, we used supply inventories to measure compliance by PD patients with the prescribed bag exchanges.

Patients and methods
Our prospective study was carried out with 30 stable PD patients (25 on CAPD and 5 on automated PD) at São Lucas Hospital, Porto Alegre, Brazil, from March to July 2004. All patients had been on PD for at least 3 months.

Data collected from patient records included age, sex, time on dialysis, diabetes status, the patient’s choice of renal replacement therapy (RRT) modality,
dialysis prescription, and peritonitis history. Adequacy of dialysis was estimated by measurements of total weekly urea clearance (Kt) normalized to total body water (V). Peritoneal Kt was estimated from measurements of 24-hour dialysate urea and of serum urea concentration at completion of the collection, taken at the latest clinic visit. Dialysate creatinine concentration was corrected for glucose interference using a correction factor determined in our laboratory.

Home supply inventories were conducted by telephone, and patients were asked about their home PD bag supply and wellbeing. The telephone call was repeated after a 1- to 2-month interval. To determine compliance, the number of exchanges actually performed was calculated and divided by the number of exchanges prescribed for the interval. The dialysis nurse routinely orders the PD bags. Patients performing at least 90% of prescribed exchanges were considered compliant (2).

Results are expressed as means or percentages. The Statistical Package for Social Sciences software (SPSS version 11 for Windows: SPSS Inc., Chicago, IL, U.S.A.) was used for the statistical analysis. The study was approved by the university’s Ethics and Scientific Committee.

Results
Table I shows patient characteristics and results.

The mean age of the patients was 52.8 years (range: 21 – 83 years). Seven of the patients (23%) had diabetes, and 19 (63%) were women. Peritoneal dialysis was the first choice of RRT for 19 of the patients (63%); the other 11 (37%) were started on PD by the renal team, mainly because of lack of vascular access or cardiovascular instability. Of the 30 patients, 21 (70%) were compliant. Nine patients (30%) were noncompliant with prescribed exchanges, performing a mean of 82% of their exchanges (range: 67% – 88%). Of the patients who chose PD as their first RRT option, 74% were compliant; of those allocated to PD, compliance was measured as 64%. Of the compliant patients, 67% had opted for PD; only 33% had been allocated to the treatment. In the noncompliant group, 56% had opted for and 44% had been allocated to PD.

Of patients performing their own bag exchanges, 75% were compliant. When exchanges were performed by a caregiver, only 60% of patients were compliant.

Weekly Kt/V was 1.9 and 1.53 for compliant and noncompliant patients respectively. Peritonitis rates for the compliant and noncompliant patients were similar (0.5 and 0.4 episodes per patient–year respectively).

Discussion
Some form of noncompliance has been reported in 80% or more of end-stage renal disease patients (3); our results are therefore not surprising. Using supply inventories to measure exchange compliance, Bernardini and Piraino concluded that noncompliance is a significantly common event in PD, occurring in one third of the patients in their unit (2). According to

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Compliant (n=21)</th>
<th>Noncompliant (n=9)</th>
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<tbody>
<tr>
<td></td>
<td>(n)</td>
<td>(%)</td>
</tr>
<tr>
<td>Sex</td>
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<td></td>
</tr>
<tr>
<td>Male</td>
<td>7</td>
<td>33.3</td>
</tr>
<tr>
<td>Female</td>
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<td>66.7</td>
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<td>Mean age (years)</td>
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<tr>
<td>Diabetes</td>
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<td>Bag exchange by</td>
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<tr>
<td>Patient</td>
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<td>71.4</td>
</tr>
<tr>
<td>Caregiver</td>
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<td>28.6</td>
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<tr>
<td>Mean weekly Kt/V</td>
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<td>—</td>
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<tr>
<td>Peritonitis (episodes/year)</td>
<td>0.5</td>
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<tr>
<td>PD chosen by</td>
<td></td>
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<tr>
<td>Patient</td>
<td>14</td>
<td>66.7</td>
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<td>Indication</td>
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data from the North American Peritoneal Dialysis Compliance Study Group, 14% of patients admit to some form of noncompliance, and patients performing more than 4 exchanges daily are significantly more likely to show noncompliance (1). In our study, patients performing their own exchanges were more likely to be compliant, which contrasts with the results of Blake et al. (1).

Women are more likely than men to comply with medical treatment, to take drugs, and to make follow-up visits. In the present study, 74% of the women and 64% of men were compliant with their bag exchanges. Using questionnaires or inventories, noncompliance rates of 10% – 20% have been reported for automated PD. Neri et al. (4) reported even lower rates in patients using the HomeChoice Pro system (Baxter Healthcare Corporation, Deerfield, IL, U.S.A.).

In the present study, noncompliance resulted in a lower weekly Kt/V, but peritonitis rates were similar in both the compliant and the noncompliant groups. Patients do not identify uremic symptoms with noncompliance, because those symptoms emerge slowly. On the other hand, peritonitis symptoms are immediately recognizable as the result of poor procedure.

Home visits to assess supply inventories are an excellent method of monitoring compliance, but when visits are not feasible, programmed telephone calls can achieve similar results.

Conclusions
The present study confirms that noncompliance is frequent and that it impairs dialysis adequacy. Evaluation of supply inventories by telephone seems to be a reliable and simple method to monitor compliance with prescribed bag exchanges in PD. Developing interventions to enhance compliance in PD patients is a challenge to nurses and to the renal team.

References

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