

LETTER TO THE EDITOR

Adherence to prophylactic infusions of factor VIII or factor IX for haemophilia

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Medication non-adherence is a true public health problem. Despite advancements in the molecular understanding of disease and improvements in therapy, patient health outcomes will not improve unless patients take prescribed medications. Decreasing the gap between efficacious and effective therapy for patients with haemophilia is an essential research agenda. Adherence is particularly important for patients on prophylaxis. Prophylactic infusion of factor VIII or IX has proven efficacy in preventing chronic joint disease and is considered the standard of care for children with severe haemophilia A and B [1,2]. However, the effectiveness of the prophylaxis depends on the recommendation of prophylaxis by the physician and adherence to the recommended regimen.

Less than 40% of patients with severe haemophilia currently receive prophylaxis [3,4]. In a survey of haemophilia treatment centres, 37% of physicians reported that patient compliance was a barrier in implementing prophylactic therapy [5]. Haemophilia is a chronic disease, which requires long-term prophylactic therapy to prevent joint disease. Patients on primary prophylaxis are asymptomatic and may not see the benefits of prophylaxis. The treatment regimen is complex, requiring factor preparation and intravenous infusion. The treatment is also home-based so that it is not directly supervised by a physician or nurse. Previous adherence research in patients with haemophilia is limited. In 2003, Hacker *et al.* [6] published a cross-sectional study with of 38 haemophilia patients from the Mountain States Regional Haemophilia and Thrombosis Center. Only 58.8% of patients reported compliance of

>75%. Barriers to compliance were time commitment, uncooperative child, and venous access. 8.3% did not believe that prophylaxis was necessary or beneficial. 44.1% agreed that understanding the benefits of prophylaxis improved compliance with prophylaxis.

Based on this information, we hypothesized that time constraints and health beliefs may differ between adherent and non-adherent patients and may be studied using the health belief model (HBM). Important components of the model include an individual's perceptions about (i) level of personal susceptibility to the particular illness or condition; (ii) degree of severity of the consequences (organic and/or social), which might result from contracting the condition; (iii) the health action's potential benefits or efficacy in preventing or reducing susceptibility and/or severity; (iv) physical, psychological, financial, and other barriers or costs related to initiating or continuing the advocated behaviour. The HBM also stipulates that a cue to action or stimulus must occur to trigger the appropriate behaviour by making the individual consciously aware of his feelings about the health threat (Fig. 1) [7]. Time constraints are difficult to alleviate, but health beliefs may be modifiable, and further study of health beliefs may lead to interventions to improve adherence to prophylactic therapy.

To study our hypotheses we conducted a single institution study at the University of Michigan Hemophilia Treatment Center. Twenty-two patients consented to participate in this IRB approved research study. The median age was 9 years (0.5–39). Eight subjects are on primary prophylaxis, 14 subjects are on secondary prophylaxis, including two with history of intracranial haemorrhage. Five patients currently have ports. Seventeen patients receive factor infusions via peripheral vein and eight patients do self-infusion. Eight subjects infuse once a week, five patients infuse twice a week, and nine patients infuse three or more times per week.

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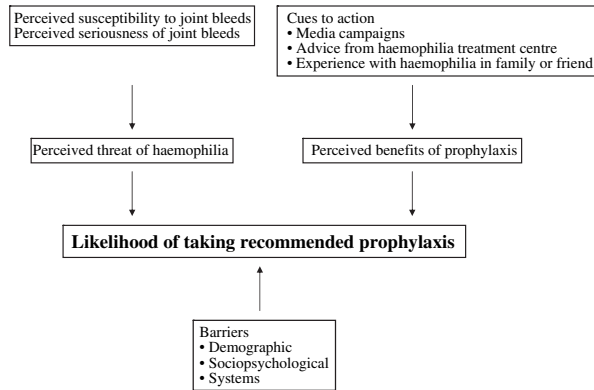


Fig. 1. Model to predict adherence to prophylaxis in haemophilia.

Data collection included a written survey instrument to assess adherence, health beliefs, barriers to adherence, and facilitators of adherence. The home care agency provided a computerized printout regarding refills of factor in the past 6 months. Written and electronic log records were reviewed to calculate the percentage of prophylaxis infusions given over the past 6 months. Subjects were classified into adherent and non-adherent groups based on overall adherence as reported on the written survey. Adherent patients were defined as infusing >80% of recommended prophylaxis doses. The remaining subjects were classified as non-adherent.

On the written survey, 73% of subjects reported excellent adherence overall and 55% reported excellent adherence during the past 2 weeks. Based on the 10 available logs 78% had excellent adherence. The estimated adherence from the logs matched the estimated adherence from the survey in 10/10 cases. According to the home care company records 81% had excellent adherence. The home care company records over-estimated adherence in 4/21 cases. Seven subjects reported that adherence improved over time, 12 reported that adherence remained the same, and three reported that adherence worsened over time.

In order to address our hypothesis regarding time constraints we included questions regarding how time constraints interfere with prophylaxis. Five of seven subjects in the non-adherent group compared with seven of 15 subjects in the adherent group reported that 'the time it takes' keeps them from infusing factor as instructed ($P = 0.01$).

In order to address our primary hypothesis regarding health beliefs we included questions regarding the perceived susceptibility to joint bleeds, the perceived seriousness of joint bleeds, and the perceived benefit of prophylaxis. There was not a significant difference between adherent and non-adherent groups regarding the susceptibility to joint bleeds, the seriousness of joint bleeds and the benefits of prophylaxis. Subjects in both groups identified benefits of reducing joint bleeds, being more active, having more normal life, and improving school attendance. The majority of patients identified the susceptibility to joint bleeds and the benefits of prophylaxis, but only nine subjects identified joints bleeds as a serious problem. Semi-structured interviews are underway to further assess this issue and further explore how interventions to modify health beliefs may lead to improved adherence.

In conclusion, this study corroborates prior data that indicated sub-optimal adherence and time constraints as a major barrier to adherence. In addition, we found that the HBM is a useful model to conceptualize ways to improve adherence to prophylactic therapy for patients with haemophilia.

References

- Berntorp E, Boulyjenkov V, Brettler D *et al.* Modern treatment of haemophilia. *Bull World Health Organ* 1995; 73: 691–701.
- Medical and Scientific Advisory Council. *MASAC Recommendations Concerning Prophylaxis Medical Bulletin no. 193 (Chapter Advisory 197)*. 1994.
- Shapiro AD. Why is primary prophylaxis underutilized in the United States? *Haemophilia* 2003; 9: 670–2.
- Blanchette VS, McCready M, Achonu C, Abdolell M, Rivard G, Manco-Johnson MJ. A survey of factor prophylaxis in boys with haemophilia followed in North American haemophilia treatment centres. *Haemophilia* 2003; 9(Suppl. 1): 19–26.
- Schramm W, Berger K. Economics of prophylactic treatment. *Haemophilia* 2003; 9(Suppl. 1): 111–5.
- Hacker MR, Geraghty S, Manco-Johnson M. Barriers to compliance with prophylaxis therapy in haemophilia. *Haemophilia* 2001; 7: 392–6.
- Becker MH, Maiman LA, Kirscht JP, Haefner DP, Drachman RH, Taylor DW. Patient perceptions and compliance: recent studies of the health belief model. In: Haynes RB, Taylor DW, Sackett DL, eds. *Compliance in Health Care*. Baltimore, MD: The Johns Hopkins University Press, 1979: 78–109.