Barriers and bridges to insulin therapy: bio psychosocial classification
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Abstract
Barriers to insulin therapy are a major challenge to optimal practice of primary care diabetes. The primary care practitioner has to contend with multiple barriers while trying to initiate appropriate insulin therapy in a timely manner. Proper understanding of these barriers allows for efficient bridging of them. This article proposes a bio psychosocial classification of the potential barriers to insulin therapy, and possible bridges which can be built to overcome them.

Keywords: Diabetes, Insulin, Insulin analogues, Patient related barriers, Physician related barriers, Drug related barriers.

Introduction
The bio psychosocial model of health is an apt platform to understand the pathophysiology, clinical presentation, treatment targets, and management strategies of diabetes mellitus.1 Biomedical, psychological and social or environmental factors play a causative role in the development of diabetes, and modify the acute as well as chronic features of the syndrome. They influence the choice of targets and strategies as well.2

Insulin is an indispensable tool for the management of hyperglycaemia, and has been used for nearly a century now. In spite of its proven benefits and advantages, insulin use still faces many barriers.3 These barriers have been studied and discussed by various authors. The barriers are usually been classified as patient-related and provider-related.4 A more exhaustive framework lists 5 Ps (patient, physician, public, product, pen) which influence insulin adherence.5 An age-old concept, the Quadruple of Atreya, can also be utilized to craft a taxonomic structure for barriers to insulin. This quadruple divides factors influencing medical outcome into patient, physician, drug and attendant (family) related.6

We propose a simple systematic classification of the barriers to insulin, using the bio psychosocial model. The same structure can be utilized to conceptualize, and implement bridges over these barriers.

Barriers
This model allows a 3 x 3 systematic study of barriers to insulin. Biomedical, psychological and social barriers can be further classified as patient/external environment-related, physician-related, and drug-related. These barriers are listed in Table-1. Physical limitations such as lack of manual dexterity, and impaired tactile, visual or auditory acuity may prevent appropriate use of insulin.7 Psychological issues such as fear of injections, and social challenges like stigma or ostracization linked to injectable use also work as barriers. For the physician, biomedical barriers include perceived inability to choose the appropriate insulin regime and manage potential side effects.8 Psychosocial concerns encompass perceived lack of competence in soft skills such as counseling and support, as well as fear of doctor-shopping by the patient. Drug related barriers can also be classified according to the bio psychosocial model. While biological factors suggest a mismatch of insulin regimes or preparations with the patient’s glucophenotype, psychological barriers include fear of injections and/or needles.

The social aspects of drug use have been highlighted in the science of social pharmacology.9 In the Insulin context, social barriers are created by use of indiscriminate delivery devices, or use of insulin regimes and preparations which require rigid timings do not afford

<table>
<thead>
<tr>
<th>Domain</th>
<th>Patient</th>
<th>Physician</th>
<th>Drug</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomedical</td>
<td>Lack of dexterity, visual impairment, cognitive limitations</td>
<td>Lack of knowledge/inability to select correct regime or preparation</td>
<td>Mismatch with glucotype</td>
</tr>
<tr>
<td>Psychological</td>
<td>Fear of unknown; fear of injections</td>
<td>Perceived inability to counsel</td>
<td>Pain/discomfort</td>
</tr>
<tr>
<td>Social</td>
<td>Fear of stigma</td>
<td>Fear of doctor shopping; multiple responsibilities</td>
<td>Lack of social discreteness; cost</td>
</tr>
</tbody>
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...flexibility.\textsuperscript{10} Financial and health care system related barriers, which are very important in pay-from-pocket and developing markets; can be included in the social domain, in physician and drug-related columns.

**Bridges**

There are no barriers which cannot be bridged, and this holds true for insulin therapy as well. Once the astute clinician is able to identify specific barriers to insulin in a particular patient, she or he can take appropriate steps to bridge them.\textsuperscript{11,12} Biomedical barriers are best bridged by enhanced continuing medical education to make physicians aware of modern insulin regimes, preparations and delivery devices, and how to utilize them in a patient-centric manner.

Psychological barriers are broken by improving soft skills of physicians (e.g., motivational interviewing counseling, support) and providing demonstrations of injection technique with modern devices. Social barriers can be addressed by social marketing of timely insulin use, and by encouraging use of flexible insulin in discrete delivery devices.

**Summary**

The bio psychosocial model and the triad of patient, physician and drug based issues can be combined to create a 3 x 3 classification of barriers to insulin. This in turn, can be used to craft a similar list of bridges, or proposed actions to address the barriers. The proposed systematic classification is simple, yet comprehensive, and should prove useful to diabetes care professionals as well as people living with diabetes.

**References**