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Understanding the Growth Hormone Therapy Adherence Paradigm: A Systematic Review

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- Injections considered difficult [51]
 - Lack of choice of injection device [21, 49]
 - Longer duration of treatment [21, 51]
 - Use of conventional syringe rather than automatic pen injection device [51]
 - Use of needle and syringe rather than needle-free device [54]
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- Training by non-hospital staff or no training rather than training by hospital staff [51]
 - Inadequate contact with health-care providers [66]

Barriers to Insulin Initiation

DIABETES CARE, VOLUME 33, NUMBER 4, APRIL 2010

The Translating Research Into Action for Diabetes Insulin Starts Project

Table 1—Comparisons of survey responses for primary nonadherent and adherent patients newly prescribed insulin*

	Nonadherent	Adherent
Stated moderate/extreme concerns (versus not at all or a little concerned) regarding:		
The cost of insulin shots	12/51 (24)	22/82 (27)
How insulin shots might restrict your activities or "hold back" your lifestyle	20/54 (37)	20/82 (24)
The additional burden associated with home monitoring of blood sugar	15/59 (25)	19/82 (23)
Difficulty giving insulin due to things like poor eyesight, shakiness, or arthritis	23/55 (42)	24/81 (30)
Your ability to make dose adjustments†	22/54 (41)	10/82 (12)
How insulin shots may negatively impact your social life‡	21/56 (38)	15/82 (18)
A negative impact on your job (if you work outside the home)†	15/45 (33)	6/72 (8)
The insulin shots being painful†	17/56 (30)	12/82 (15)
Possible side effects of giving yourself shots†	24/55 (44)	10/81 (12)
Insulin shots causing you to have low blood glucose‡	22/51 (43)	13/81 (16)
Patient-provider interactions and communication		
Never or only sometimes (versus usually or always) felt confidence or trust in personal physician that manages diabetes	11/68 (16)	11/97 (11)
Moderately or extremely difficult (versus not at all difficult or a little difficult) to talk with doctor about concerns about diabetes medication or insulin	9/66 (14)	10/100 (10)
Risks and benefits were not very well or not well at all (versus somewhat well or very well) explained†	37/67 (55)	37/96 (39)
Inadequate health literacy: sometimes, often, or always (versus never or rarely); have problems learning about medical condition because of difficulty understanding written information (not including problems due to poor vision)†	35/69 (51)	30/99 (30)
How was the insulin self-management training provided		
Doctor trained†	1/66 (2)	13/77 (17)
Insulin self-management class†	5/66 (8)	31/77 (40)
Nurse trained†	4/66 (6)	33/77 (43)

Improving Patient Acceptance of Insulin Therapy by Improving Needle Design

Journal of Diabetes Science and Technology
Volume 6, Issue 2, March 2012

James J. Norman, B.S., and Mark R. Prausnitz, Ph.D.

What Can We Learn from Patient-Reported Outcomes of Insulin Pen Devices?

Journal of Diabetes Science and Technology
Volume 5, Issue 6, November 2011

Barbara J. Anderson, Ph.D.,¹ and Maria J. Redondo, M.D., Ph.D.^{1,2}

Correlates of Insulin Injection Omission

DIABETES CARE, VOLUME 33, NUMBER 2, FEBRUARY 2010

The Role of Comfort and Discomfort in Insulin Therapy

Ronnie Aronson, M.D., FRCPC, FACE

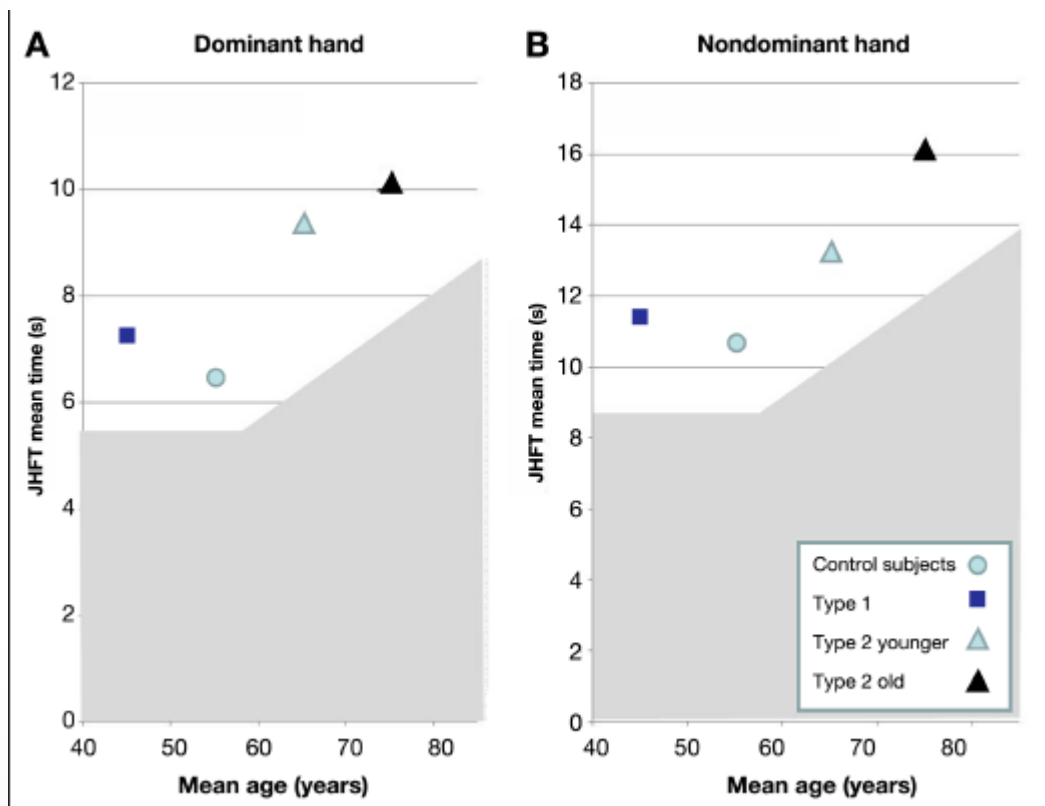
DIABETES TECHNOLOGY & THERAPEUTICS
Volume 14, Number 8, 2012

Analysis: Desirable Attributes of Insulin Injection Pens That Drive Patient Preference and Compliance

Jeffrey D. Zahn, Ph.D. Journal of Diabetes Science and Technology
Volume 5 Issue 5 September 2011

Evaluation of Dexterity in Insulin-Treated Patients with Type 1 and Type 2 Diabetes Mellitus

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Thomas Forst, M.D.,¹ and Andreas Pfützner, M.D., Ph.D.¹



Real-world factors affecting adherence to insulin therapy in patients with Type 1 or Type 2 diabetes mellitus: a systematic review

M. J. Davies¹, J. J. Gagliardino², L. J. Gray³, K. Khunti³, V. Mohan⁴ and R. Hughes⁵

Table 3 Adherence in patients initiating therapy with a vial/syringe or a pen device or switching from a vial/syringe to a pen device

Reference and country	Adherence measure (n)	Adherence with vial/syringe	Adherence with pen device	P-value
Initiating insulin therapy				
Buyzman <i>et al.</i> , 2011 [31] USA	Medication possession ratio (1876)	38%	53%	< 0.001
Lee <i>et al.</i> , 2011 [32] USA	Proportion of days covered (4088)	45.2%	54.6%	< 0.001
Pawaskar <i>et al.</i> , 2007 [34] USA	Medication possession ratio (1330)	50%	53%	
Switching from a vial/syringe to a pen device				
Baser <i>et al.</i> , 2010 [30] USA	Medication possession ratio (1064)	13%*	22%	< 0.001
Lee <i>et al.</i> , 2006 [33] USA	Medication possession ratio (1156)	62%†	69%	< 0.01
Pawaskar <i>et al.</i> , 2007 [34] USA	Medication possession ratio (1120)	56%*	45%	< 0.05
	Insulin therapy	90%*	92%	< 0.05
	All medication			

*Patients remaining using vial/syringe.

†Adherence before switching to a pen device.

Understanding the Growth Hormone Therapy Adherence Paradigm: A Systematic Review

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Table 3. Interventions that have been proposed to improve adherence to GH therapy in paediatric patients

- Giving patients a choice of injection devices [21, 49, 64]
- Use of automatic injection devices [70, 71], injection pens [72] or a conceptual electronic device [73]
- Early patient and parent education and training [60, 74], at home [49] or with the involvement of dedicated clinical nurse specialist [63, 64]
- An educational camp [75]
- Discussion of potential adverse effects [15]
- Mutual analysis of specific barriers to adherence by patient and clinician [20]
- Self-monitoring [10]
- Home delivery with hospital tracking [68]
- Longer duration of GH prescriptions, i.e. less frequent prescription collections and pharmacy visits [21]
- A token reinforcement system [11]
- Calendars and reminders [16]
- A 'written contract' defining specific responsibilities of each individual in the care of the patient [16]
- Involvement of immediate and extended family and social support [11, 16]
- Support groups [10]
- Long-acting rhGH preparations [76]

Real-world factors affecting adherence to insulin therapy in patients with Type 1 or Type 2 diabetes mellitus: a systematic review

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Strategies for improving adherence

- Increased use/availability of pen devices
- Reduce the financial burden of insulin therapy to the patient
- Provide additional medical support to patients (e.g. nurses, psychiatrists)
- Educational programmes to increase awareness of diabetes
- Develop therapies that allow for fewer injections and increased flexibility in treatment regimen
- Provide additional medical support to patients (e.g. nurses, psychiatrists)

Adesione alle terapie a lungo termine: problemi e possibili soluzioni

Published by the World Health Organization in 2003
under the title *Adherence to long term therapies: Evidence for action*
© World Health Organization 2003

Tabella 4 Fattori che influenzano l'adesione ai trattamenti per il diabete e interventi per migliorarla, elencati secondo le cinque dimensioni

Diabete	Fattori che influenzano l'adesione ai trattamenti	Interventi per il miglioramento dell'adesione
Fattori sociali ed economici	(-) Costi delle cure (59); età superiore ai 25 anni (21) (adesione all'attività fisica); adolescenti più grandi (somministrazione di Insulina) (42); adolescenti più grandi (SMBG) (60); sesso maschile (adesione alla dieta) (21); sesso femminile (adesione all'attività fisica) (21); situazioni ambientali ad alto rischio (72,82,83,85-89,92,93,95,98,102,103,105) (+) Età inferiore ai 25 anni (21); (adesione all'attività fisica); adolescenti più giovani (somministrazione di Insulina) (42); adolescenti più giovani (SMBG) (60); sesso maschile (adesione all'attività fisica) (21); sesso femminile (adesione alla dieta) (21); supporto sociale (21,68); supporto familiare (21)	Mobilizzazione delle organizzazioni sul territorio; assessment dei bisogni sociali (21,68); preparazione adeguata delle famiglie (21)
Fattori legati al sistema sanitario e al team di assistenza	(-) Scarsa relazione tra paziente e medico (79)	Trattamento multidisciplinare; training sull'adesione per gli operatori sanitari (114,116); identificazione degli obiettivi del trattamento e definizione delle strategie di intervento; formazione continua; continuo monitoraggio e rivalutazione del trattamento (115); interventi sui sistemi; copertura assicurativa della terapia nutrizionale (120); reminder telefonici per i pazienti (121); modelli assistenziali per le patologie croniche (122-125)
Fattori correlati alla patologia	(-) Depressione (73); durata della malattia (21,41)	Educazione all'uso dei farmaci (110,113)
Fattori correlati alla terapia	(-) Complessità del trattamento (48,50) (+) Minor frequenza delle dosi (48); monoterapia e schemi terapeutici semplici (50); frequenza del comportamento di self-care (48,50)	Self-management da parte del paziente (112); semplificazione del regime terapeutico (48,50); educazione all'uso dei farmaci (110,112,113)
Fattori correlati al paziente	(-) Depressione (75); stress e problemi emotivi (70-72); abuso di alcol (77); (+) Buona autostima (62,63)/self-efficacy (64-67,78)	Interventi comportamentali e motivazionali (111,112); assessment dei bisogni psicologici (111)

SMBG = self-monitoring della glicemia (+) fattori ad effetto positivo (-) fattori ad effetto negativo

QUATTRO COMPONENTI ESSENZIALI

- Informazioni chiare su benefici e rischi
- Condivisione degli obiettivi di cura
- Assunzione di un ruolo attivo da parte del paziente
- Atteggiamento empatico e di incoraggiamento da parte del medico

