BETACONNECT^M Autoinjector Comparator Market Research Study

Introduction

- Optimal management of multiple sclerosis (MS) requires adherence to long-term administration of disease-modifying therapies (DMTs), such as interferon beta-1b¹
- Poor adherence is frequently observed among patients with MS, and this can lead to increased risk of relapse and higher medical costs¹⁻³
- Autoinjectors may be used by patients to reduce injection site reactions and anxiety related to self-injection^{1,4}
- Use of an autoinjector may also improve adherence⁵
- BETACONNECT[™] is a new fully electronic autoinjector for patients undergoing treatment with Betaseron (interferon beta-1b) that includes advanced autoinjector design and technology with features not available in mechanical autoinjectors:
- Intuitive user interface, automatic needle insertion/ retraction, and ergonomic design to facilitate easier handling
- Adjustable injection depth and speed, with visual and auditory signals that the injection has finished
- Injection reminders and automatic recording of injection information
- The objective of the current survey was to assess patient perceptions of BETACONNECT relative to their experiences with mechanical autoinjectors for competitor products

Methods

- Patients in the United States with relapsing forms of MS on DMTs using mechanical autoinjectors were recruited to participate in the survey
- Autoinjector use was limited to Copaxone Autoject (glatiramer acetate), Extavia Auto-Injector (interferon beta-1b), or Rebif Rebiject (interferon beta-1a)
- o Patients using the Rebif Rebidose pen were excluded because Rebidose is a pen device
- All patients were compensated for their travel to the research facilities
- Data were collected through a 60-minute in-person structured interview with 4 stages
- Stage 1 (introduction): Demographics and disease/ treatment history were assessed

Methods (cont.)

- across the same list
- o Patients were asked to assign the maximum rating of 10 to only 1 attribute
- Stage 3 (BETACONNECT demonstration): The interviewer demonstrated how to use BETACONNECT, after which all patients performed a simulated injection
- o All branding was removed from the autoinjector for the demonstration and simulated injection
- Stage 4 (BETACONNECT rating): Patients rated **BETACONNECT** on the same 18 attributes and compared their current autoinjector to **BETACONNECT**
- o Patients were again asked to assign the maximum rating of 10 to only 1 attribute

Results

Demographic characteristics

- 90 respondents with MS agreed to participate and completed the survey (Table 1)
- in the United States

Table 1. Demographic characteristic 18-30 years 31-40 years 41-50 years 51-65 years 66-70 years ortheast (P outheast (A Midwest (Ch Geographic distribution uthwest Vest (Los Ar Copaxone (C rrent MS medicatio and autoinjector elapsing-re econdary pr MS type inicallyiso

^aThe distribution of patients taking these medications is somewhat representative of the market share of these drugs within the United States. ^bIncludes 1 patient with a diagnosis of SPMS and RRMS.

– Stage 2 (current and ideal autoinjectors ratings): Patients were asked to rate the importance of 18 possible attributes for an ideal autoinjector and how well their current autoinjector performed

 The distribution of DMT use in the sample was somewhat similar to the current market share of these products within the injectable DMT segment

survey participants (n = 90)		
	Number (%)	
	70 (78%)	
	3 (3%)	
	16 (18%)	
	25 (28%)	
	42 (47%)	
	4 (4%)	
lphia, New York City)	16 (18%)	
, Miami, Tampa)	22 (24%)	
	7 (8%)	
gas, Phoenix, Houston, Dallas)	27 (30%)	
, Seattle)	18 (20%)	
ne Autoject/Copaxone Autoject 2)	63 (70%)	
ct/Rebif Rebiject II)	25 (28%)	
tojector/Extavia Autojector II)	2 (2%)	
g MS (RRMS)	87 (97%)	
sive MS (SPMS)	3 (3%) ^b	
yndrome	1 (1%)	
ing MS	0 (0%)	

Results (cont.)

Ideal autoinjector attributes

- The most highly valued attributes (given ratings of 8, 9, or 10) were the easy overall injection process (96%), ease to push the start button (88%), and comfort of holding the autoinjector (86%) (Figure 1)
- Other features that were rated highly included the ability to use the autoinjector without help (83%), adjustable injection depth (81%), and the ability to reach different injection sites (78%)
- Ideal autoinjector attributes given the highest number of maximum scores were the overall ease of the injection process (26%), ability to use the autoinjector without help (11%), and minimal sound of injection (11%)

Comparison of autoinjectors with ideal autoinjector and BETACONNECT

- BETACONNECT outperformed the Copaxone autoinjector and the Rebif autoinjector across all attributes (Figure 2)
- Ratings for BETACONNECT also exceeded those given to the ideal autoinjector for almost all characteristics
- When patients rated BETACONNECT, built-in dwell time (ie, the time the needle remains in the skin after the medication has been injected) was the most valued characteristic (97%), followed by the self-check feature (84%), greater ability to customize injections (84%), and adjustment of injection speed (83%) (Figure 3)
- Other features that were rated highly included the ability to use the autoinjector without help (83%), adjustable injection depth (81%), and the ability to reach different injection sites (78%)
- Ideal autoinjector attributes given the most number of maximum scores were the overall ease of the injection process (26%), ability to use the autoinjector without help (11%), and minimal sound of injection (11%)
- The subsequent assessment of overall autoinjector preference revealed that 83% of patients preferred BETACONNECT to their current autoinjector (Figure 4
- The main reasons for the preference for BETACONNECT were ease of injection, user-friendly functions (eg, built-in dwell time and automatic needle retraction), and quiet injections
- Preference was also analyzed by age group (Table 2), showing a high preference (100%) for BETACONNECT among patients 18-40 years of age, with older patients slightly less likely to want to switch

Figure 1. Ideal autoinjector attributes

Ideal autoinjector attributes ratings from 1 (strongly disagree that the attribute is important) to 10 (strongly agree that the attribute is important), where 10 is the most important attribute and 1 the least important attribute. The percentages represent the proportion of patients who selected a rating of 8, 9, or 10 for each attribute.



Figure 3. Attitudes and perceptions toward BETACONNECT in comparison with patients' current autoinjectors

Percentages represent the proportion of patients who selected a rating of 8, 9, or 10 for BETACONNECT (on a scale of 1 [least important] to 10 [most important] for each statement).

- Built-in dwell time ensures full drug delivery
- Self-check feature will improve reliability
- Greater ability to customize injections
- Adjusting injection speed may increase comfort
 - Injection sound is more user-friendly
- Automatic needle retraction is valuable Lights/button make operation self-explanatory
- Injection process is easier
 - More comfortable injections
- Reminder reduces chance of forgetting injections
- Customizing speed/depth may reduce pain
 - Less anxiety with new autoinjector
 - Better look and feel
 - More comfortable to handle
 - Quiet injections will reduce anxiety
 - May improve adherence to medication
 - Will be able to use more injection sites
 - Increases independence
 - Requires less assistance

Figure 2. Comparison of BETACONNECT, the Copaxone autoiniector, and the Rebif autoinjector, with ideal autoinjector attributes

Autoject, Rebiject, and BETACONNECT were rated based on how well they performed across these attributes, from 1 (not well) to 10 (very well). For each attribute, the percentage of patients who selected a rating of 8, 9, or 10 for each autoinjector using symbols as shown in the legend.





Age	n/N	%
18-30 years	3/3	100
31-40 years	16/16	100
41-50 years	22/25	88
51-65 years	31/42	74
66-70 years	3/4	75

Patients agreeing with the statement, "I would rather use the new autoinjector than my current autoinjector." n = number of patients in each age group who would rather use BETACONNECT than their current autoinjector. N = total number of patients in each age group.



Figure 4. Patient overall autoinjector preference and main underlying reasons

Discussion

- The most important features of an ideal autoinjector were ease of use, comfort to hold, customization for optimal comfort with injections, and ability to self-inject
- Interestingly, some of the features of BETACONNECT were not thought to be of major importance for an ideal autoinjector but were highly rated after the simulated injection
- BETACONNECT outperformed the patients' current autoinjectors on a number of factors, particularly for features that were not rated as highly important in an ideal autoinjector
- This suggests that the improvements in autoinjector design featured in BETACONNECT may be meeting patients' needs even though they were initially unaware of those needs
- The main reasons for the preference for BETACONNECT in the current survey were related to the ease of injection, user-friendliness, and the quiet injection
- These features can be important for meeting the common concern that the injection might not be performed correctly⁶
- The key strength of this survey was the in-depth nature of each interview and the time spent by patients with BETACONNECT
- One potential weakness is the uncontrolled setting and lack of longitudinal follow-up (eg, to assess adherence), which should be addressed with future research. Additionally, the study protocol used only simulated injections
- Participants had an uneven distribution of current autoinjector use, although this distribution reflects the generally high prevalence of Copaxone- and Rebif-treated patients in the United States
- Lastly, paying patient expenses might have biased their opinions to BETACONNECT, but the removal of branding should have reduced this potential bias

Conclusions

- In the current survey, BETACONNECT attributes and features were rated highly by patients compared with both an ideal autoinjector and their current mechanical autoinjectors
- These findings suggest that the use of BETACONNECT may increase patient satisfaction and potentially increase overall medication adherence

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Disclosures

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