The AutoShield Pen Needle is Useful for Preventing Accidental Puncture while Administering Insulin to Others by Injection

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Diabetes patients usually perform insulin injection on themselves (self-injection); however, caregivers also administer insulin to patients (other-injection).¹ The use of insulin injection pens with needles sometimes causes accidental puncture. Furthermore, if the patient has an infectious disease such as human immunodeficiency virus or Hepatitis C virus, accidental puncture during other-injection can result in transmission of the infectious disease to the caregiver.^{2,3} The AutoShield[®] Pen Needle (Becton, Dickinson and Company, Franklin Lakes, NJ), which recaps automatically and prevents accidental puncture,⁴ has been available in Japan since 2011. However, the ease of use of the AutoShield has not been evaluated.

We evaluated the ease of use of the AutoShield by comparing it with the PenNeedle[®] 32G (Novo Nordisk A/S, Bagsværd, Denmark) in other-injection settings: injection to the arm and injection to the abdomen. Our study group included 30 respondents [mean (standard deviation), 38.4 (9.0) years, (range, 24–59 years)] comprising 15 women (50%) and 15 men (50%). Respondents answered a questionnaire (**Table 1**) immediately after performing injections. Results were scored from 1 to 5. We performed a comprehensive evaluation and investigated individual questionnaire items to determine the differences between the AutoShield and the PenNeedle. Univariate and multivariate analysis were performed using Statview 5.0 software (SAS Institute Inc., Cary, NC) and significance was defined as p < .05.

The AutoShield was significantly superior to the PenNeedle in both injection to the arm [AutoShield 3.63 (1.07), PenNeedle 3.03 (0.67), p = .012] and injection to the abdomen [AutoShield 3.40 (0.97), PenNeedle 2.87 (0.57), p = .012] in the comprehensive evaluation.

Univariate analysis revealed that AutoShield length (needle + device) was significantly inferior (too long) compared with the PenNeedle in both injection to the arm [AutoShield 3.37 (0.89), PenNeedle 2.93 (0.64), p < .001] and injection to the abdomen [AutoShield 3.80 (0.61), PenNeedle 3.00 (0.37), p < .001]. However, the AutoShield was significantly superior to the PenNeedle in preventing accidental puncture in both injection to the arm [AutoShield 4.67 (0.55), PenNeedle 3.07 (0.83), p < .001] and injection to the abdomen [AutoShield 4.67 (0.55), PenNeedle 2.93 (0.83), p < .001]. Multivariate analysis revealed that length (needle + device; p = .013) and accidental puncture (p < .001) were significantly different between AutoShield and PenNeedle for the arm. Also, for the abdomen, length (needle + device; p = .023) and accidental puncture (p = .013) were evaluated as significant.

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Table 1.

Questionnaire Used in the Present Study

Accidental puncture: Suppose you have to inject insulin four times a day. How many accidental punctures are you likely to commit?					
	5	4	3	2	1
Length (needle + device)	Too long	Slightly long	Moderate	Slightly short	Too short
Ease of needle injection	Good	Slightly good	Average	Slightly bad	Bad
Stability	Good	Slightly good	Average	Slightly bad	Bad
Ease of button pushing	Good	Slightly good	Average	Slightly bad	Bad
Ease of device pulling	Good	Slightly good	Average	Slightly bad	Bad
Accidental puncture	Never	1/year	1/month	1/week	More
Ease in seeing the dial	Good	Slightly good	Average	Slightly bad	Bad
Comprehensive evaluation	Good	Slightly good	Average	Slightly bad	Bad

The length (needle + device) of the AutoShield was too long, but the AutoShield was superior to the PenNeedle regarding prevention of accidental puncture and in the comprehensive evaluation. We propose that needles for otherinjection should be equipped with an automatic recapping ability. Although needles with an automatic recapping ability are more expensive than conventional needles, they may prevent accidental puncture and the spread of infectious diseases.

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