Epinephrine Via Needle-Free Device Would Be Administered Faster After Symptoms: Results of a Patient/Caregiver Survey

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Harris Kaplan,[1] Erin Rooney,[1] Sarina Tanimoto,[2] Richard Lowenthal[2]

[1]Red Team Associates, Horsham, PA, USA; [2]ARS Pharmaceuticals, Inc., San Diego, CA, USA

RATIONALE

- Intramuscular epinephrine is the first-line of treatment for severe allergic reactions.[1] However, patients and caregivers often hesitate before using an epinephrine injectable device, potentially endangering themselves or their child because progression of an allergic reaction can be quick and unpredictable.[2]
- The time people wait before device use, what triggers use, and reasons for hesitation are not understood. Insight was sought regarding time to device use after symptom development and how that might change if a needle-free epinephrine device was available.

AIMS

To gain an in-depth understanding of:

- the impact a needle-free device may have on patient/caregiver motivation to use epinephrine sooner and;
- the influence a needle-free epinephrine device may have on carrying behavior.

METHODS

The study used data from a self-reported patient/caregiver survey.

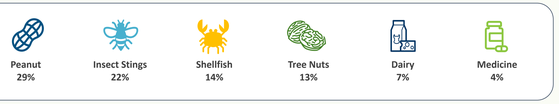
- 20-minute double-blinded web-based survey of 100 patients and 100 caregivers who used an epinephrine injectable device within the 12 months prior to participating in the survey. (exempt from IRB approval)
- To explore usage of epinephrine, including questions about their or their child's allergy, current treatment, the last allergic reaction, the number of minutes they waited before using the device, and how a needle-free epinephrine device may impact their time to use and carrying habits.

Table 1: Selected Demographic Characteristics of Respondents

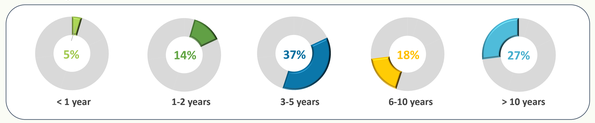
Respondent	N	Median Age Range	Median Household Income	% with EAI Currently Filled
Caregivers	100	26-45 Years Old	$50,000 - $99,999	97%
Patients: Adult Males	50	26-45 Years Old	$50,000 - $99,999	98%
Patients: Adult Females	50	26-45 Years Old	$25,000 - $49,999	84%

RESPONDENT BACKGROUND

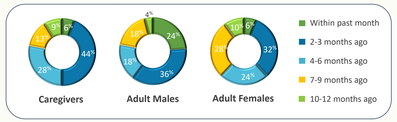
Allergy Type



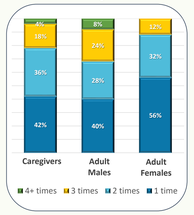
Time Allergy has been Known



Time Since Last EAI Injection



Past Year EAI Usage

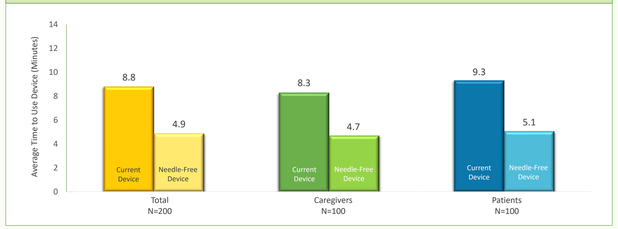


EAI Administration Among Adults and Children

RESULTS

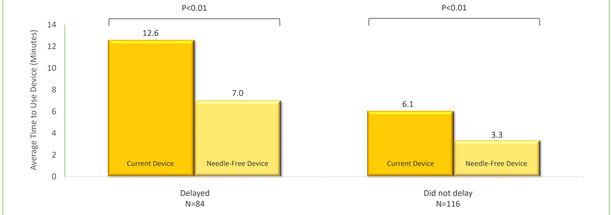
- Average time between symptom development and device use was 8.8 minutes. When respondents were presented with a needle-free delivery device concept for administering epinephrine, the estimated time to use was reduced to 4.9 minutes. The reduction in time before use was similar between caregivers (46%) and patients (43%). (**Figure 1**)

Figure 1: Time to Use Device (Current Device vs Needle-Free Device)



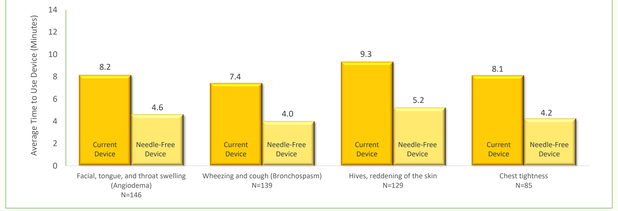
- When evaluating respondents that self-identified as hesitating or delaying use of their/their child's current EAI and those that didn't, both showed a statistically significant reduction in time before use when a needle-free epinephrine device was presented. (**Figure 2**)

Figure 2: Time to Use by Hesitation and Delay (Current Device vs Needle-Free Device)



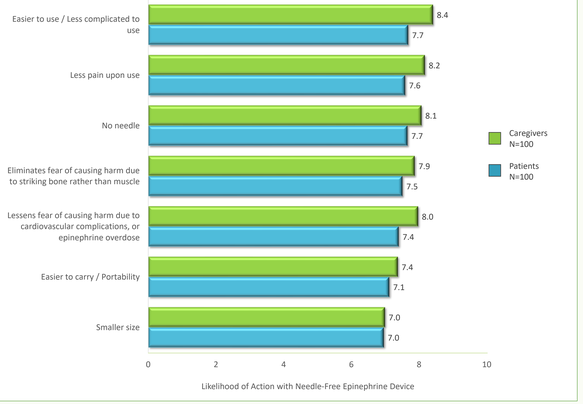
- When looking at symptoms that precipitated epinephrine use, those that experienced chest tightness had the largest reduction in time to use (48%) when a needle-free epinephrine device was presented. (**Figure 3**)

Figure 3: Symptoms Experienced Before Device Use (Current Device vs Needle-Free Device)



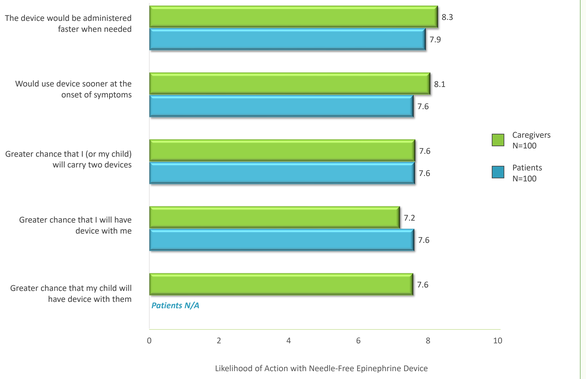
- A needle-free epinephrine device was perceived as easier/less complicated and less painful to use; the lack of a needle would eliminate fear of harm errors (e.g. striking bone or accidental intravenous injection). (**Figure 4**)

Figure 4: Impact on Motivation to Use a Needle-Free Epinephrine Device Sooner



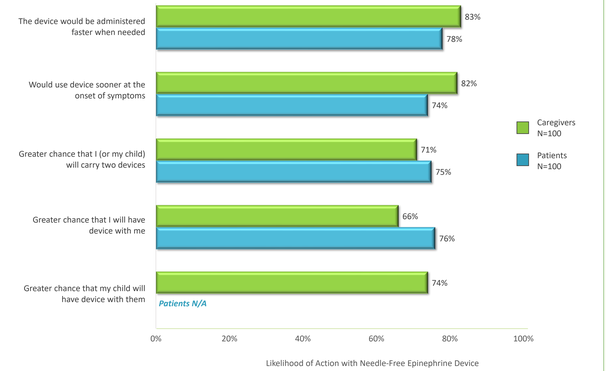
- Both caregivers and patients would be more inclined to carry a needle-free epinephrine device and use it sooner. (**Figure 5**)

Figure 5: Impact of Needle-Free Epinephrine Device on Carrying Behavior



- 81% of total respondents said they would have a likelihood of 7 or greater (on a 10-point scale) of administering a needle-free epinephrine device faster when needed. (**Figure 6**)
- 76% of patients said they would have a greater chance (7+ out of 10) of having a needle-free epinephrine device with them. (**Figure 6**)

Figure 6: Percent of Respondents Rating Likelihood of Action 7 or Greater (10-point Scale)



CONCLUSION

- A needle-free option for administering epinephrine would be used sooner after symptoms developed and is perceived as being easier to use versus an injectable device. This underscores the need to develop epinephrine modalities utilizing a non-needle-based delivery system.

REFERENCES

1. Posner LS, et al. *Drug Healthc Patient Saf.* 2017;9:9. 2. Simons FER, et al. *World Allergy Organizan J.* 2011;4(2):13-37.
2. Prince BT, et al. *J Asthma & Allergy.* 2018;11:143-151.

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