SUMMARY

Analysis of the report

"GEDSA Low Dose Syringe Accuracy Test",

23 June 2016

By Select Statistical Services

Introduction

- Objective :
  - Analyse data arising from the GEDSA Low Dose syringe accuracy study
- In this syringe accuracy study :
  - 7 devices were tested in a variety of scenarios on their performance in delivering a target dose of 0.2 ml.
  - Several factors were varied during the study (syringe filling method, the orientation of the tube on connection, indication of whether the tip of the syringe has been flicked or not to remove fluid from the tip)

Imbalanced design

The number of replications varies between different combinations of device and factor levels. Missing combinations of device and factor levels and imbalance have implications for the statistical analysis

f.method	t.orient	flick	A	B	C	D	E	F	LDT1
cup	down	flick	0	0	0	0	0	0	49
straw-down	down	flick	0	0	0	0	0	0	0
straw-up	down	flick	0	0	0	0	0	0	0
cup	up	flick	0	0	0	0	0	0	49
straw-down	up	flick	0	0	0	0	0	0	0
straw-up	up	flick	0	0	0	0	0	0	36
cup	down	no-flick	16	16	16	16	16	16	49
straw-down	down	no-flick	16	16	16	16	16	16	0
straw-up	down	no-flick	16	16	16	16	16	16	0
cup	up	no-flick	16	16	16	16	16	16	49
straw-down	up	no-flick	16	16	16	16	16	16	0
straw-up	up	no-flick	16	16	16	16	16	16	36

Table 1: The number of replications at each combination of factor levels and device. The rows highlighted pink indicate those combinations of factor levels that are included in the analysis.

Statistical considerations

- In the analysis, we subtracted the target dose of 0.2 ml from the actual dose delivered and took the absolute value (i.e. converting negative numbers to positive numbers of the same size) to obtain the *absolute dosing errors*.

- In order to make a fair comparison between the devices we only include the three combinations of factors that have measurements for every device, as indicated in Table 1 by the pink highlighting.

- Note in particular that we only use the no-flick trials of device LDT1 because the other devices only have no-flick trials.

Results

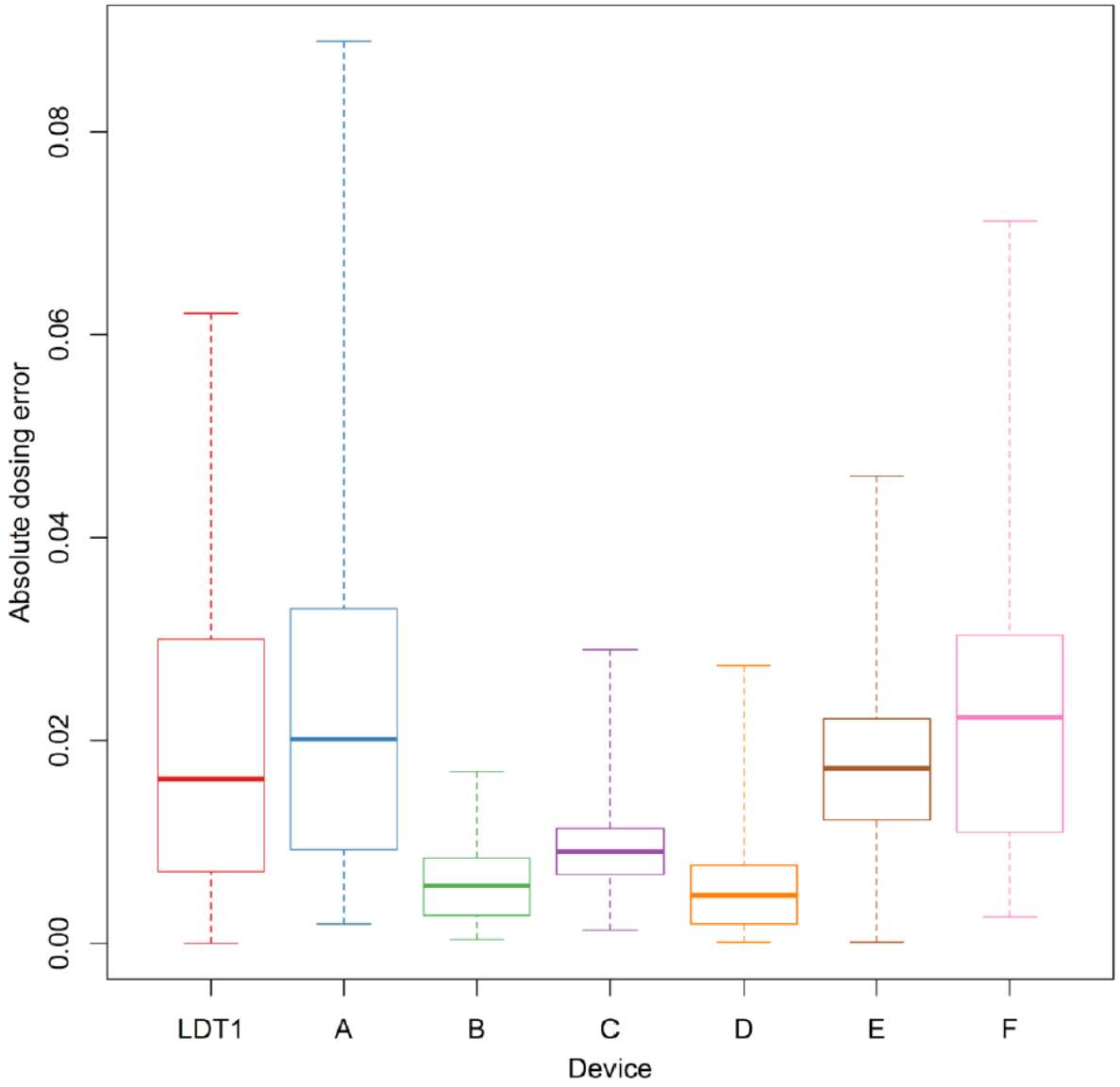

Figure 1: Box plots showing the distributions of absolute dosing errors. In each box the central line shows the median, the ends of the box show the first and third quartiles, and the whiskers show the minimum and maximum.

Conclusion

- In terms of the mean absolute dosing errors of the devices, **we have found no significant difference between the Low Dose Tip syringe (LDT1) and the standard ENFit syringe (A)**