We performed usability testing on the intubation box that has gained popularity & recent @NEJM publication

Thread with our findings (conducted by @petrosoniak & @HumanFact0rz)

We used a modified pluralistic walkthrough technique @NicholasChrimes

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SUMMARY:
We identified multiple logistical and ergonomic issues associated with the use of the intubation box & based on this WE CANNOT RECOMMEND this device at this time within
an emergency department setting.

For more details, see below

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We didn't test ability of box to protect the team from contact/droplet and aerosol contamination. Unless there is evidence of nearly 100% exposure risk reduction to team, ergonomic impedances, logistical challenges far outweigh the infection control that might be provided

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We divided the testing into 3 stages:
1. pre-intubation
2. peri-intubation
3. post-intubation

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Pre-intubation

This device is large and requires a dedicated storage location

A cleaning process is needed to ensure consistently ready for use

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Requires dedicated individual to transport this to the patient bedside

A variety of our staff tested and were able to transport it to the bedside without assistance

Our taller staff could place on beds but our shorter staff, found it challenging requiring more help

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We tested multiple positions of the bed. The device remained in place from 0 to 30 degrees without issue. It seemed more stable at 30 degrees.
Our beds aren't perfect rectangles allowing tubing to effectively pass under the box to the wall connections without kinking

PERI-INTUBATION

We piloted w/ 3 intubators and optimal bed position
Short (5ft1in): visualization OK
Average (5ft7in): Problematic
Tall (6ft2in): Adequate

Glar e from overhead lights is significant for tall operators & impacted visuals during initial steps of intubation

We required an additional person to position the device in a timely manner. Without this, we had to contend with opportunity costs that other tasks would be delayed

Bump test in multiple directions. Device exhibited head of bed instability falling into the intubator but lateral manipulation was stable.
Each intubator was able to successfully intubate using both a Mac 3 & Hyperangulated blade (Glidescope).

There were delays noted in the intubation process of at least 30 seconds.

Task specific challenges included:
- difficulty manipulating the bougie
- difficulty using a rigid stylet (usual stylet depicted here)
- difficulty with suction use (with Yankauer)

Additional thoughts

Not feasible to have in place for a cricothyroidotomy

LMA was placed without difficulty
Must be set aside for CPR

Post-intubation
In smaller room if placed on the ground, may occupy valuable room space esp if resuscitation continues

Moving to the floor/out of the room did not expose significant issues but required attention to patient circuits, a risk of disconnect can't be discounted
end