Pop-Up Fatigue: The Dangers of Safety Measures

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Background

- Clinical decision support systems (CDSSs) are designed to aid physician decision-making and improve patient outcomes (1).
- Within electronic health records (EHR) systems, computer-based CDSSs often manifest as EHR pop-ups. As EHRs have become ubiquitous in medical practice, EHR pop-ups have had the negative effect of increasing cognitive load for its users (2).
- Physician burnout levels have remained near all-time highs (3), while EHR utilization has been identified as a significant contributing factor to physician stress and burnout (4).
- A large driver of this is the excess of information that is possible with EHRs, which is made worse when presented in a fragmented manner (5).
- Within Epic, the EHR utilized within UCHealth, CDSSs are known as Best Practice Advisories (BPAs).

Project Objective

- We endeavored to gain an understanding of the perception of BPAs from physicians with high EHR utilization in an academic-affiliated community-based hospital.
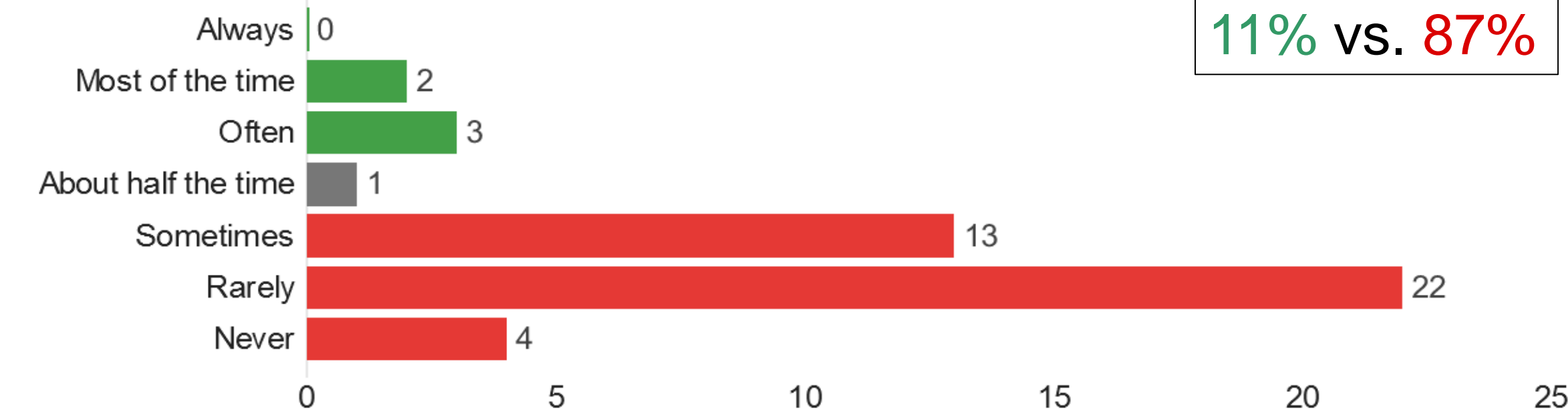
Methods

- A 13-item survey was designed to elicit user perception of BPAs via 7-point Likert scales, free response, and multiple-choice questions.
- The survey was emailed to all hospitalists and emergency medicine physicians at UCHealth Memorial Hospital.
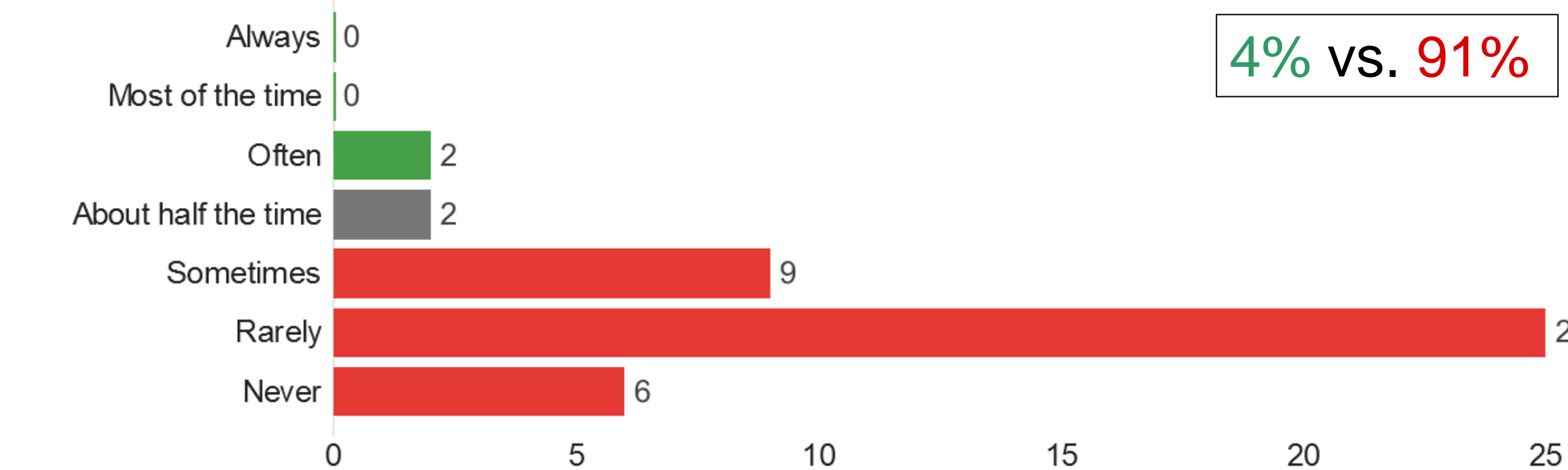- A total of 45 surveys were returned which consisted of responses from 14 hospitalists and 31 EM physicians.
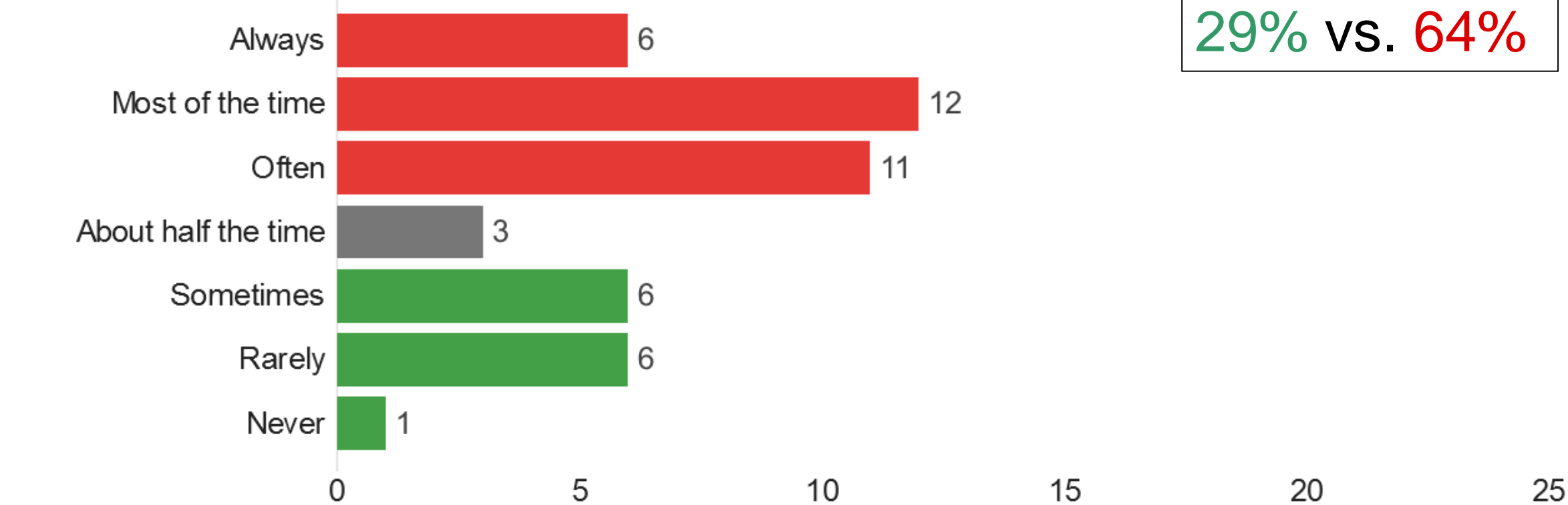
Results

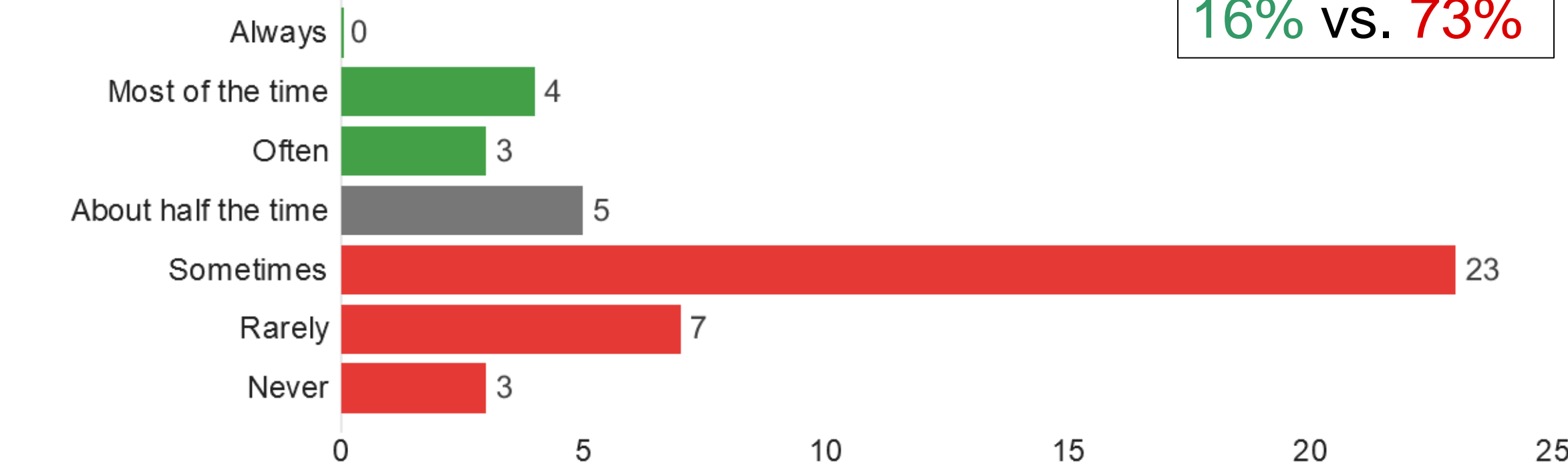**1. Best Practice Advisories introduce information that I have not yet considered for my patients.**

11% vs. 87%

Always	0
Most of the time	2
Often	3
About half the time	1
Sometimes	13
Rarely	22
Never	4

2. Best Practice Advisories change my planned course of action for my patients.

4% vs. 91%

Always	0
Most of the time	0
Often	2
About half the time	2
Sometimes	9
Rarely	26
Never	6

3. Best Practice Advisories make it more difficult for me to take care of my patients.

29% vs. 64%

Always	6
Most of the time	12
Often	11
About half the time	3
Sometimes	6
Rarely	6
Never	1

4. Best Practice Advisories are important for patient safety.

16% vs. 73%

Always	0
Most of the time	4
Often	3
About half the time	5
Sometimes	23
Rarely	7
Never	3

5. I override sepsis alerts without changing my planned course of action.

100%

Always	8
Most of the time	17
Often	10
About half the time	5
Sometimes	5
Rarely	0
Never	0
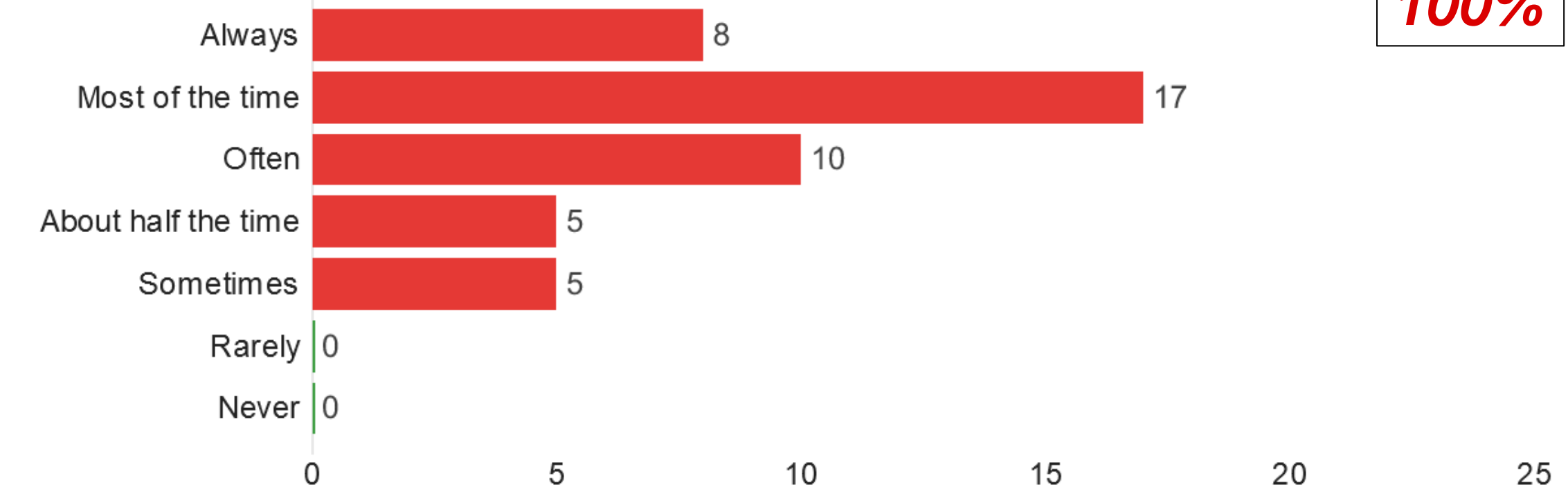
6. I close sepsis alerts without reading them.

12% vs. 78%

Always	5
Most of the time	20
Often	3
About half the time	1
Sometimes	8
Rarely	3
Never	5
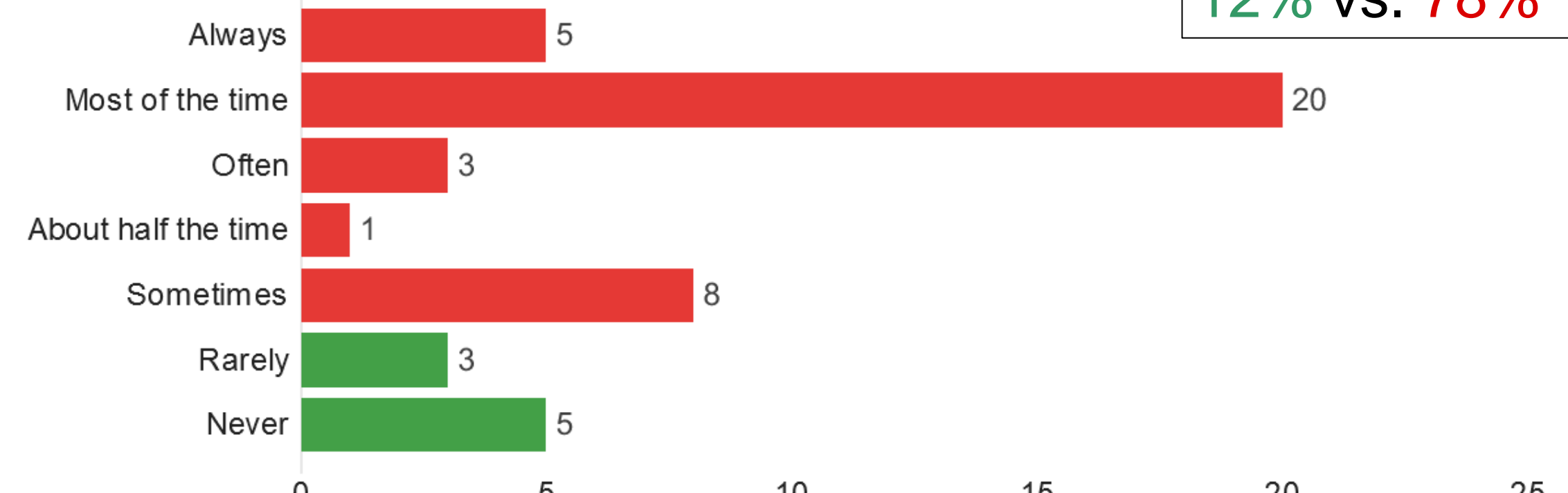
7. I override medication interaction alerts without changing my planned course of action.

4% vs 96%

Always	3
Most of the time	16
Often	9
About half the time	6
Sometimes	9
Rarely	2
Never	0
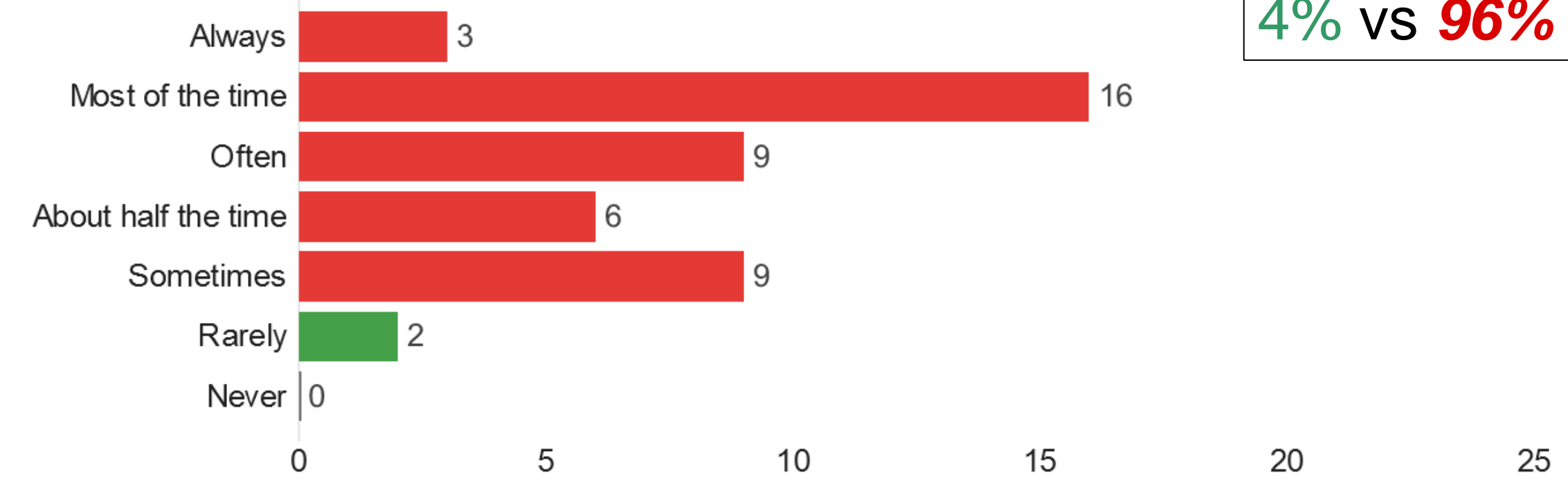
8. I close medication interaction alerts without reading them.

49% vs. 51%

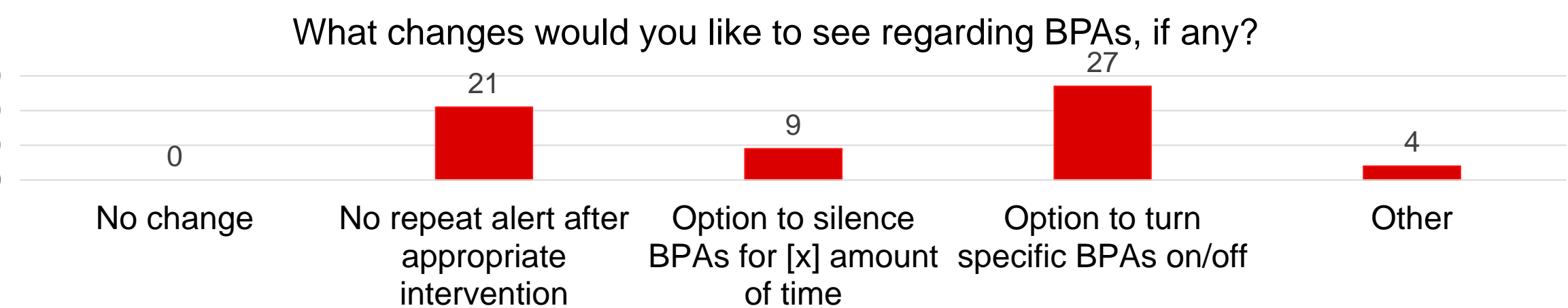|	
Always	3
Most of the time	4
Often	7
About half the time	2
Sometimes	7
Rarely	12
Never	10
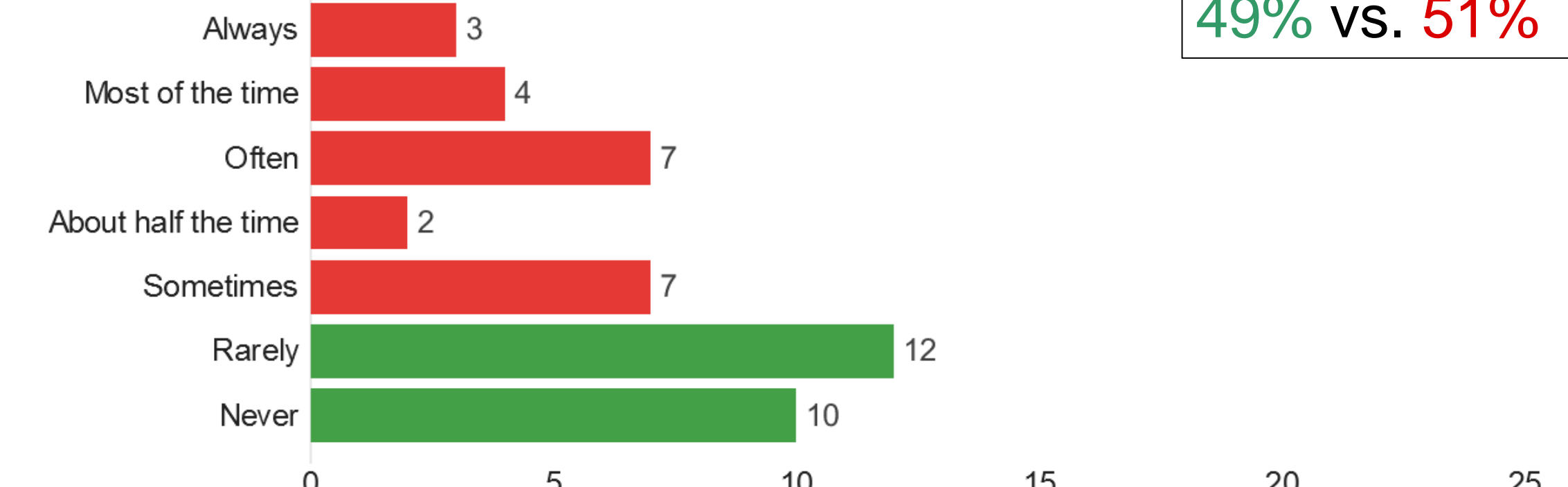
9. Please list BestPractice Advisories that you find particularly useful, if any (tallied):

Allergies: 8   Medication interactions: 8   QTc prolongation: 2
Single mentions: duplicate medications, narcan reminder at discharge, CT contrast allergies, sepsis

10. What makes these particularly useful?
"Clinically important information (usually) that is quick to execute"
"Rare but life saving"
"It is typically something I have missed or not considered or don't know about"
"It's hard to know all the potential medication interactions."

11. Please list BestPractice Advisories that you find particularly needless, if any (tallied):

Sepsis: 9   Radiology: 5   COVID: 4
"All of them": 3   Code status while doing admissions: 3
Isolation: 2   "None": 2
Single mentions: "low level medication interactions," "duplicate medications," "inactive ingredients," "CHF order set. Every. Single. Time."

12. What makes these particularly needless?:
"Redundant"   "Time waster"   "Already considered it"
"Delays other patient care"   "Slows me down"
"HUGE contributor to my burnout"
"Irrelevant"   "Doesn't change care at all"
"For the love of God and all that is holy every time I open the chart the alert pops up even when I've already ordered all the sepsis work-ups"

What changes would you like to see regarding BPAs, if any?

No change	0
No repeat alert after appropriate intervention	21
Option to silence BPAs for [x] amount of time	9
Option to turn specific BPAs on/off	27
Other	4

13. What changes would you like to see regarding BPAs, if any? (Free Text):
"ability to permanently disable BPAs"
"get rid of them"
"sepsis alert only fires if the person meets actual sirs criteria"
"only receive them for severe risk"

Discussion

- While BPAs can be a useful and important safety tool for patients, hospital providers do not perceive them as such the way they are currently implemented.
- The majority of respondents perceive BPAs as adding extraneous information that makes it more difficult to provide patient care.
- EHR pop-ups need to be implemented judiciously so that important information is not ignored as a result of EHR pop-up fatigue.
- Action needs to be taken to mitigate physician burnout as rates continue to rise, so reducing EHR pop-ups likely would relieve physician cognitive load, leading to improved stress levels and lower burnout rates.

Next Steps

- Currently working with UCHealth's informatics team to identify ways to incorporate changes based on survey responses.
  - Sepsis alerts will be changed to prevent persistent alerts despite appropriate interventions.
- Compare physician perception of BPAs to actual behavior using Epic behavior tracking data.
- Survey other EHR users such as advanced practice providers and nurses to see if the perception of BPAs differs between users.

References

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