

CRONOS

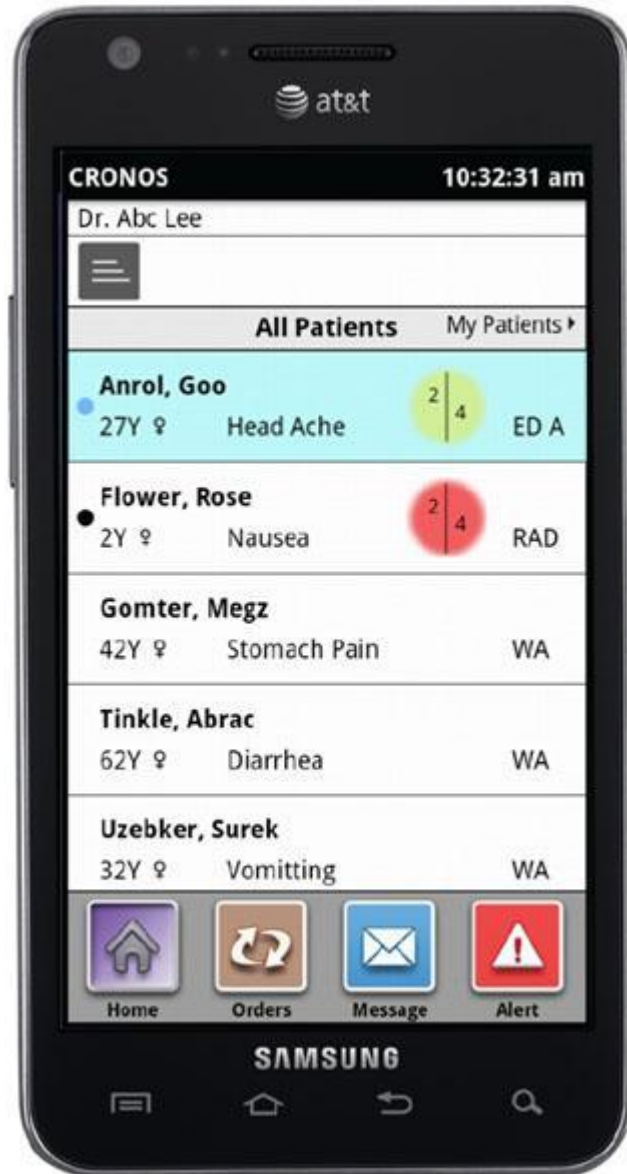


Alex C., Susan C., Haroon I., Kelton M., Ruokun R.

The medical
instrument
of the future is...





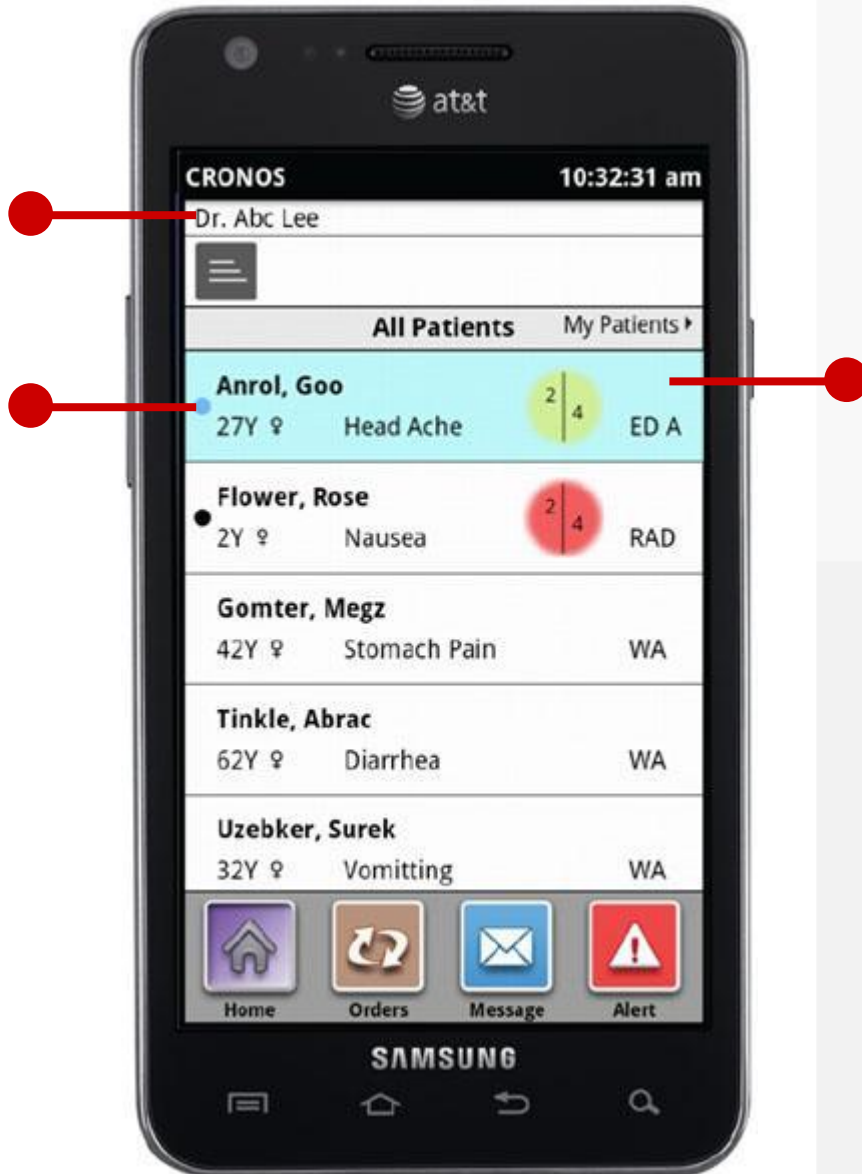


Clarity of Information:

User Name, Age, Location,
List of my patients,
Navigation options

Navigation Tasks

Patient page, Place Order,
Send Message, Pull-up
Detailed Patient information,
Sign-Out

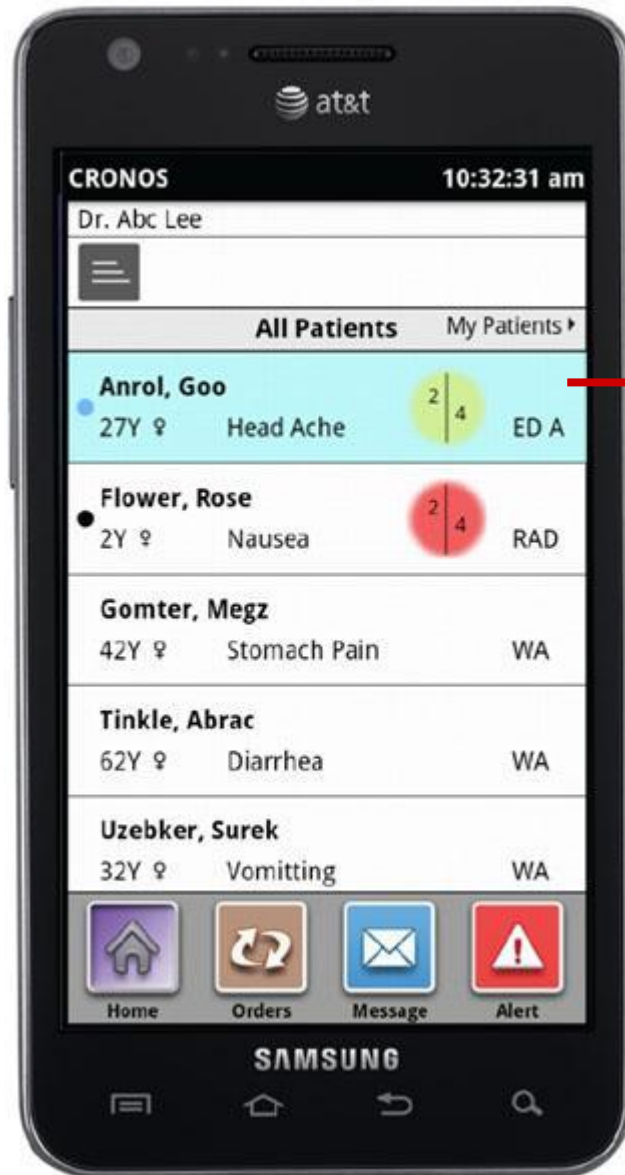


Clear Patient information:

- Age
- Location

Unclear information:

- User name
- My patients



Ergonomic guidelines for User-Interface Design:

(Hix & Hartson, 1993)

Blue - good background
Use high color contrast

Current color contrast:
patient selection & order icon

- Low color contrast
- Risk of Chromostereopsis



Terminology

- Timeline
- Whiteboard

Ambiguity

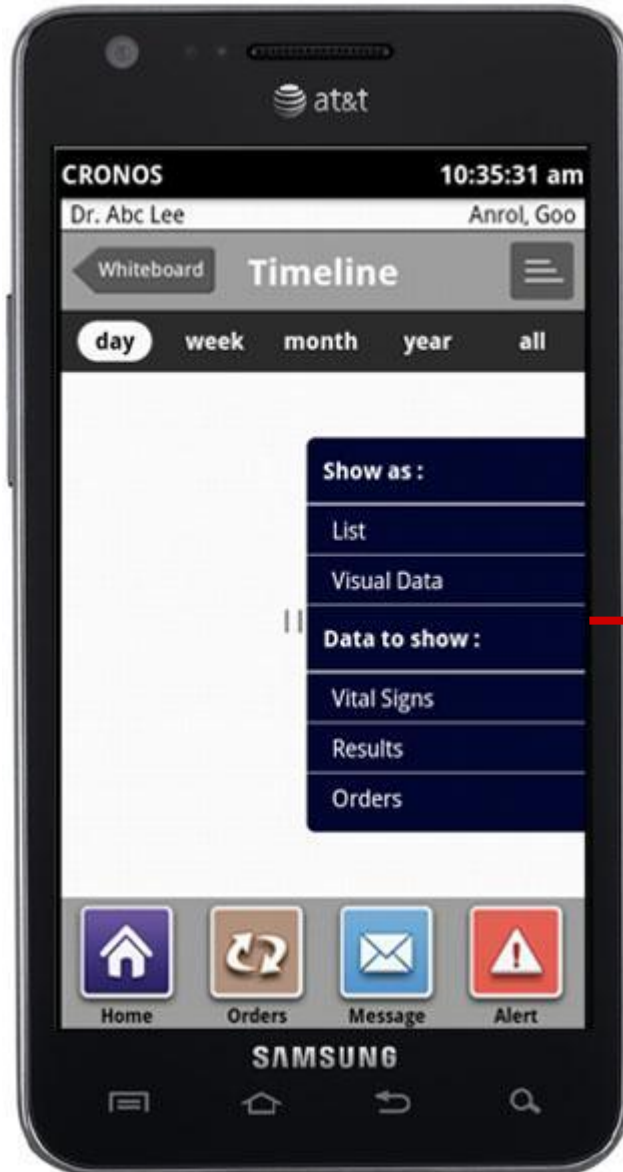
- Expansion for additional menu options



Timeline: Some slight confusion as to what timeline referred to.

Suggestion: Maybe making the page name more intuitive possibly calling it “Chart”

Whiteboard: Back to Home screen (redundancy)



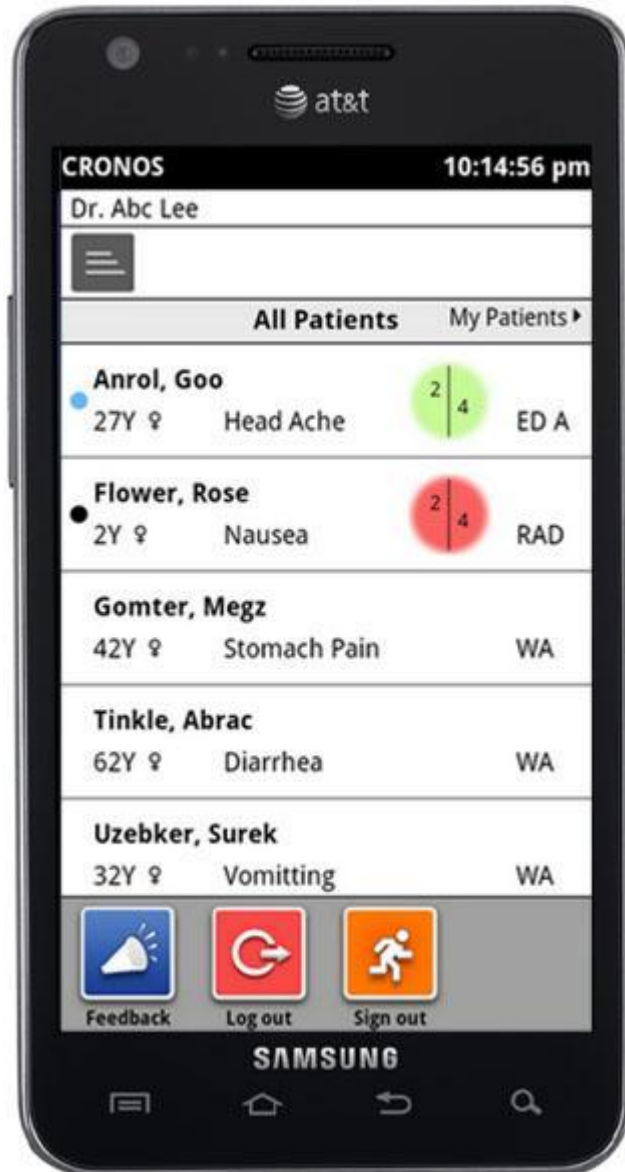
Priority of Patient information

- Current vs. Past history

Patient Chart

Name, age, sex, vital signs,
main complaint, lab data,
medication data

Past medical history



Sign Out & Log Out Icon:

- Some users clicked CRONOS title to sign out.
- Sign Out & Log Out icons more difficult to find.

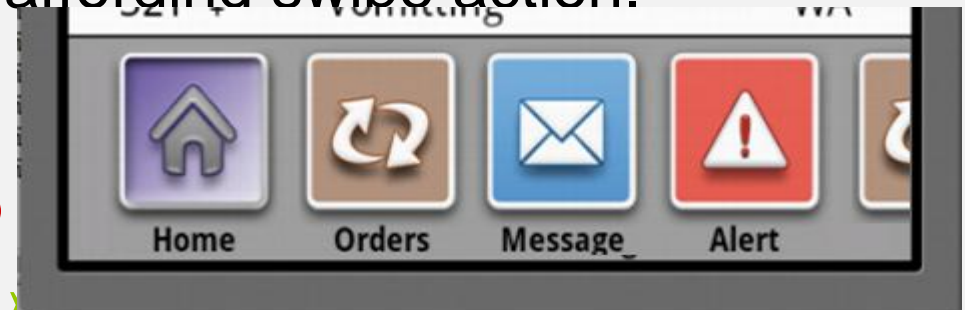
Suggestion:

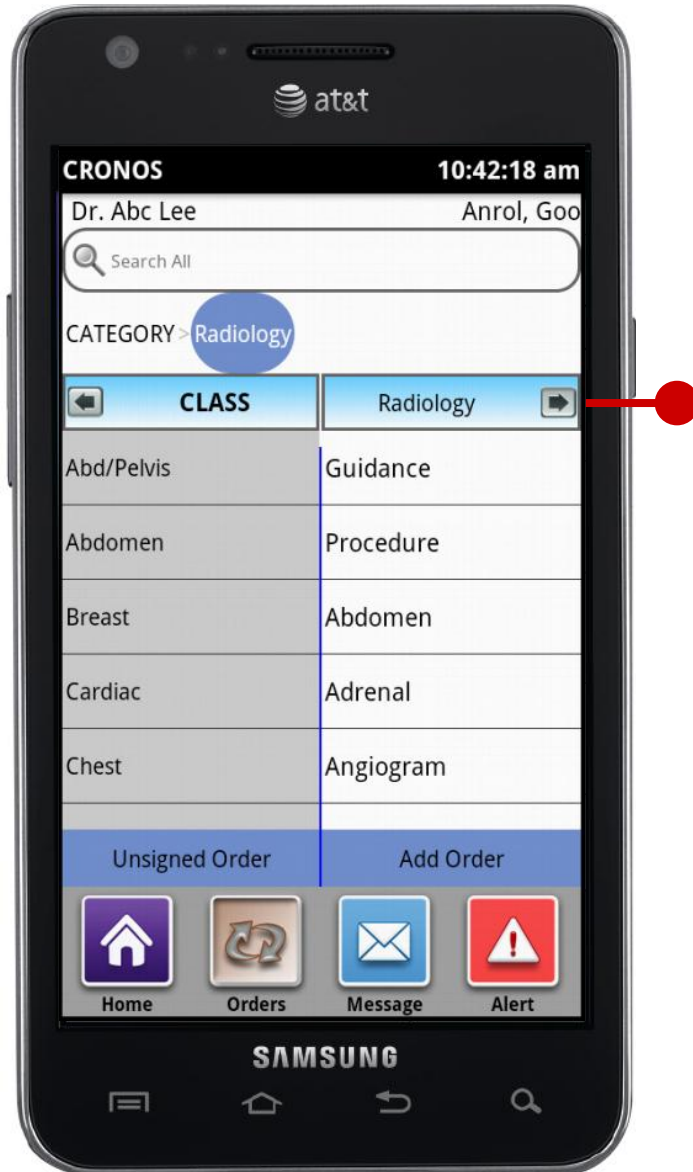
- keep CRONOS title log out
- combine sign out & log out icons
- include cue to lead users to other icon pages



The use of simple iconic elements such as arrows can give some sense of action and a small affordance as to what happens when a user performs an action.

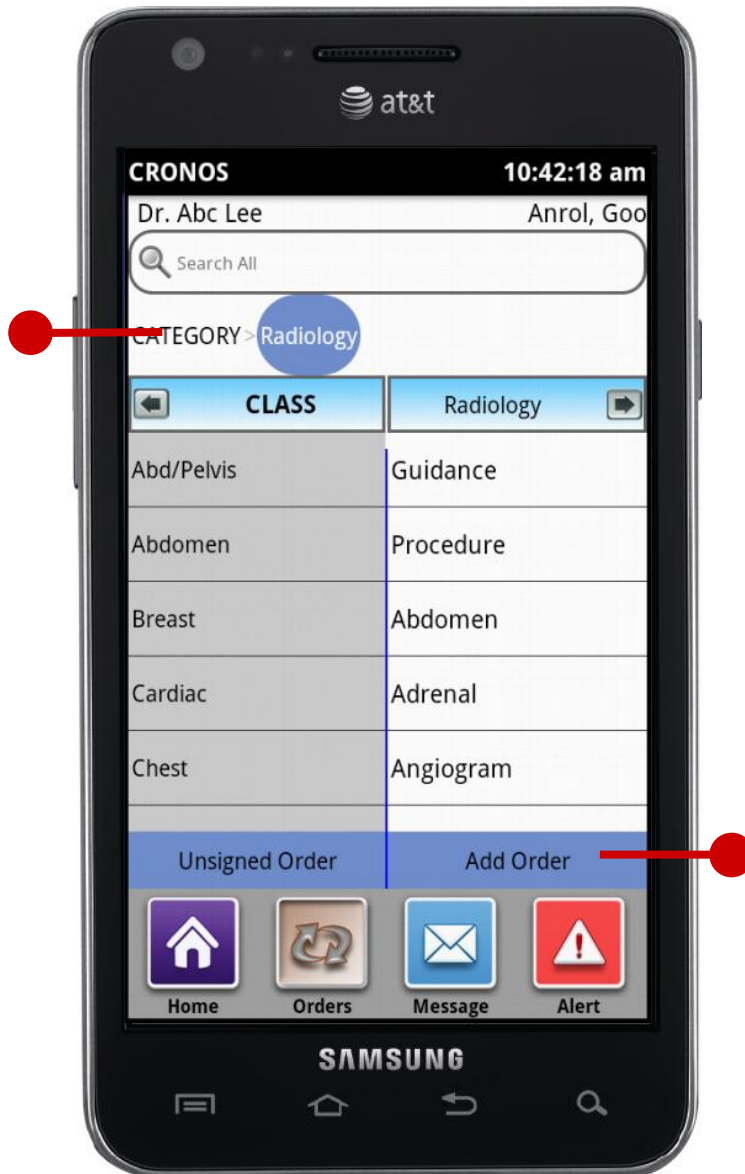
Partially visible icon implies affording swipe action.





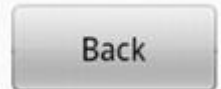
Small button has low performance in terms of success rate and number of errors.

- 0.38 inch × 0.38 inch
- Larger buttons in inappropriate regions
- Larger buttons for users wearing gloves



Consistency throughout the app can improve performance and reduce learning time.

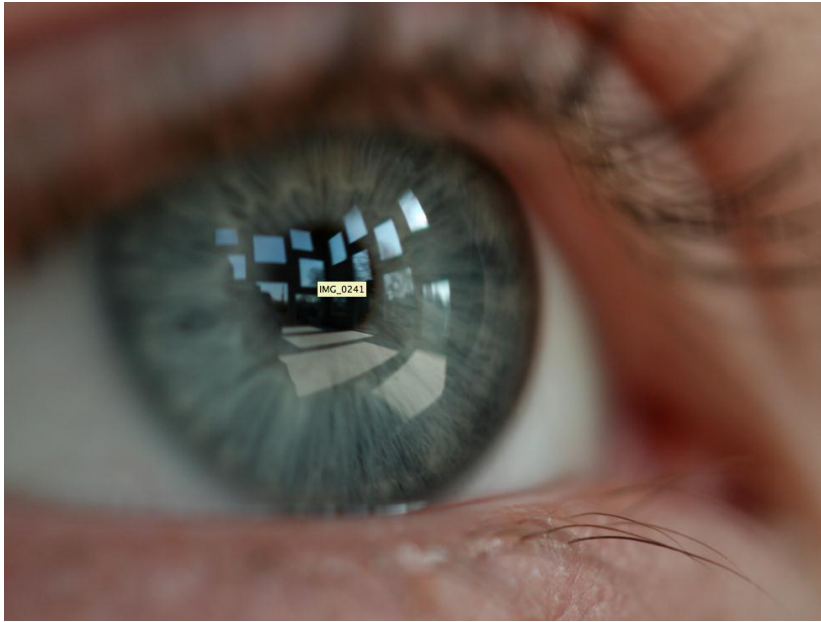
Unify button appearance



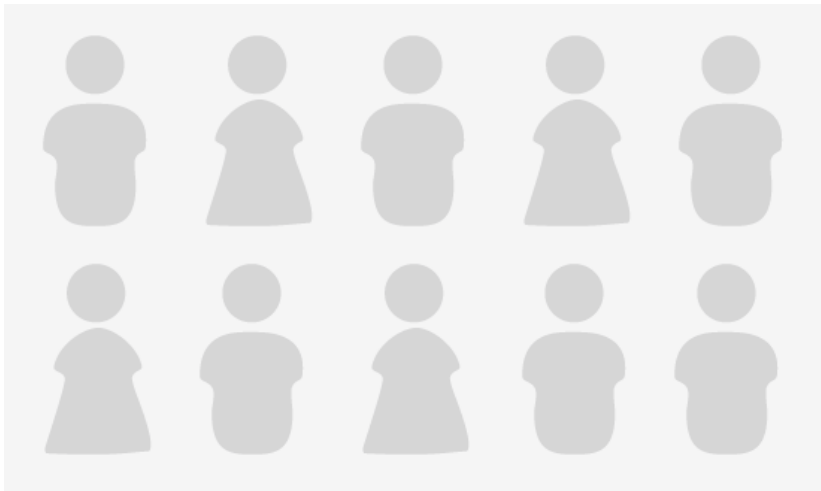
Unify title and navigation pattern



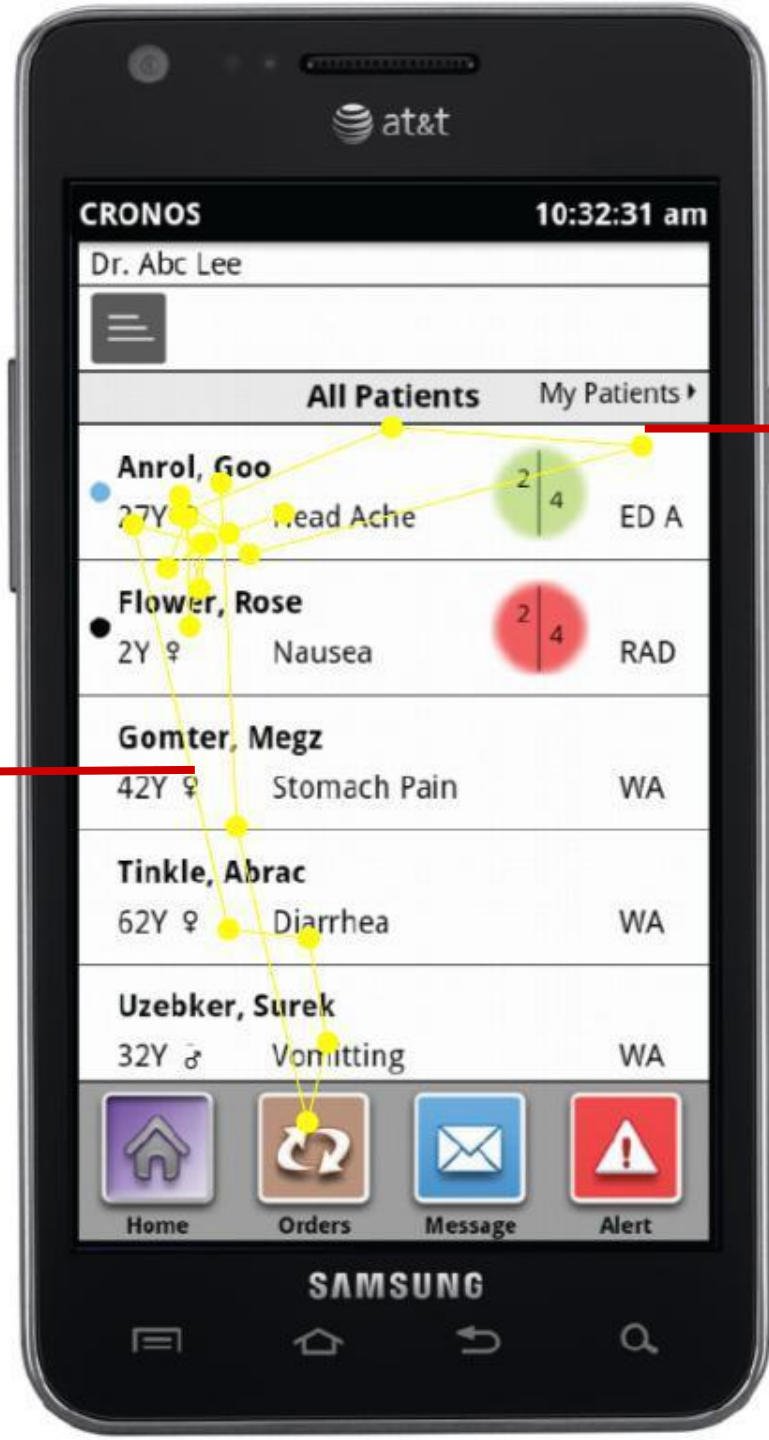
Unify font, background color, gesture



Eye tracking-
Scenario based tasks that
asked users to take the
position of a doctor using
CRONOS.



n= 10 Cornellians
with no prior experience of
the CRONOS interface.



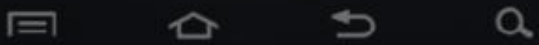
Fixation
point

Saccade

CRONOS		10:32:31 am	
Dr. Abc Lee			
All Patients		My Patients ▾	
Anrol, Goo	Head Ache	2 4	ED A
27Y			
Flower, Rose	Nausea	2 4	RAD
2Y ♀			
Gomter, Megz	Stomach Pain		WA
42Y ♀			
Tinkle, Abrac	Diarrhea		WA
62Y ♀			
Uzebker, Surek	Vomitting		WA
32Y ♂			



SAMSUNG



Dr. Abc Lee



All Patients

My Patients ▾

Anno, Goo 27Y ♂ Head Ache		ED A
Flower, Rose 2Y ♀ Nausea		RAD
Gomter, Megz 42Y ♀ Stomach Pain		WA
Tinkle, Abrac 62Y ♀ Diarrhea		WA
Uzebir, Surek 32Y ♂ Vomitting		WA



Home



Orders



Message



Alert



Dr. Abc Lee



All Patients

My Patients ▾

Anderson, Goo

27Y ♂

Head Ache



ED A

Flower, Rose

27Y ♀

Nausea



RAD

Gonzalez, Megz

42Y ♀

Stomach Pain

WA

Tinkle, Abrac

62Y ♀

Diarrhea

WA

Uzebiter, Surek

32Y ♂

Vomitting

WA



Home



Orders



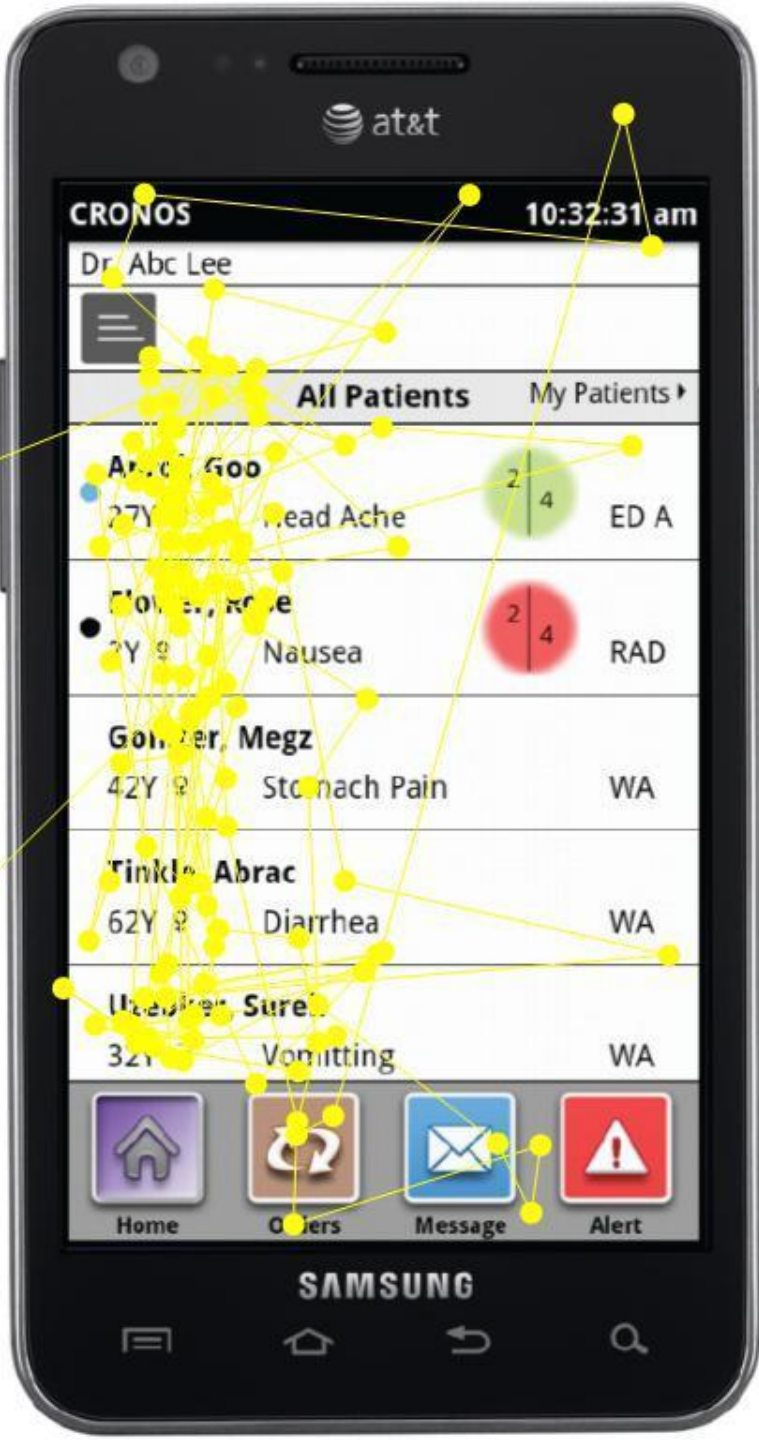
Message



Alert

SAMSUNG





Dr. Abc Lee



All Patients

My Patients ▶

Anrol, Goo

27Y ♀

Head Ache



ED A

Flower, Rose

2Y ♀

Nausea



RAD

Gomter, Megz

42Y ♀

Stomach Pain

WA

Tinkle, Abrac

62Y ♀

Diarrhea

WA

Uzebker, Surek

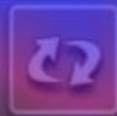
32Y ♂

Vomitting

WA



Home



Orders



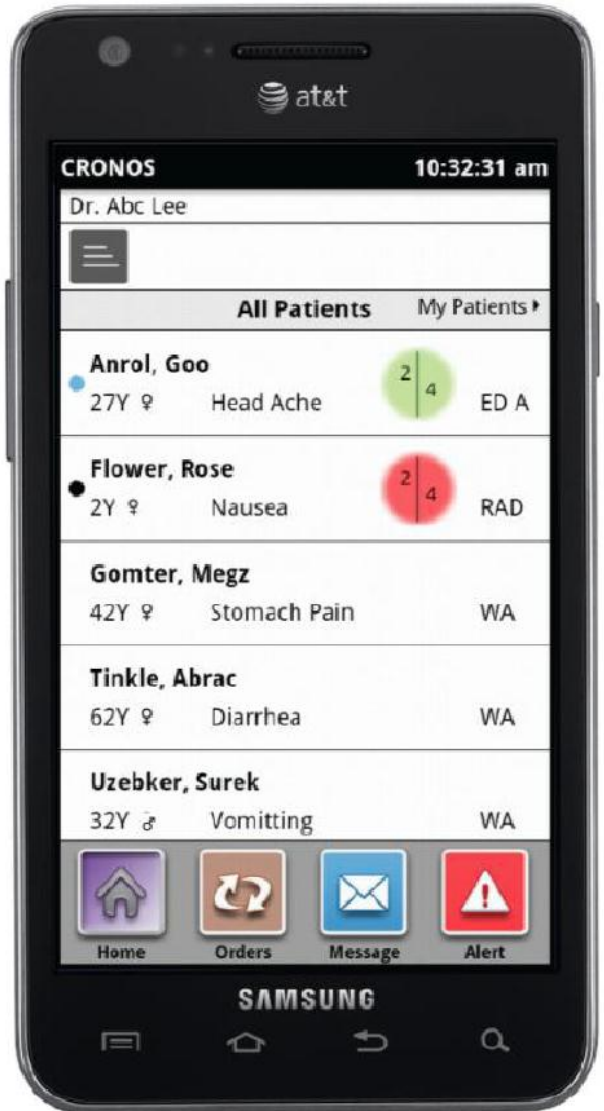
Message



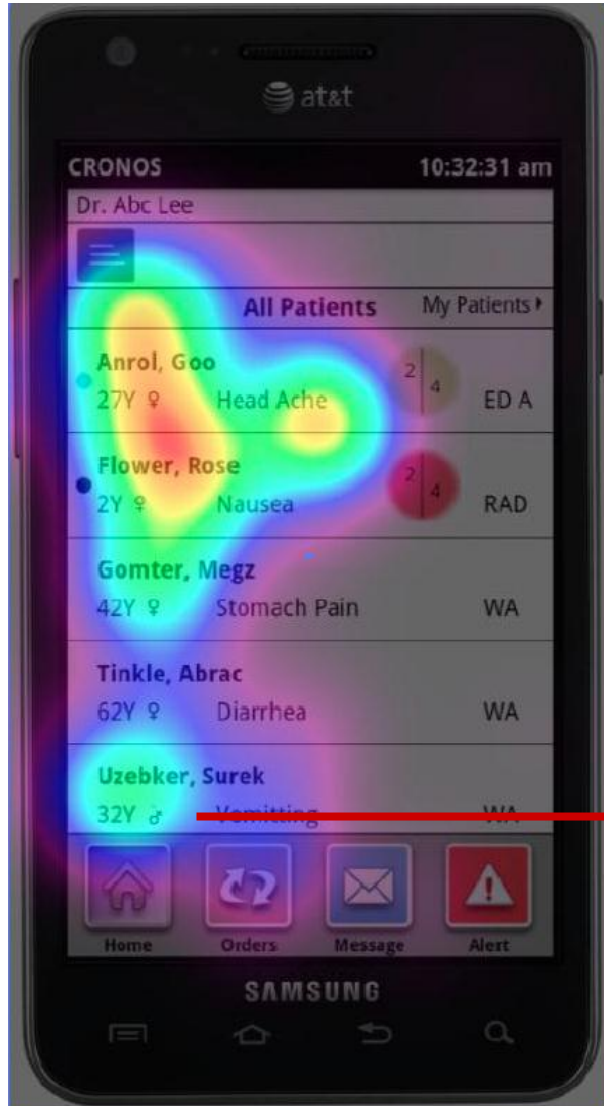
Alert

SAMSUNG





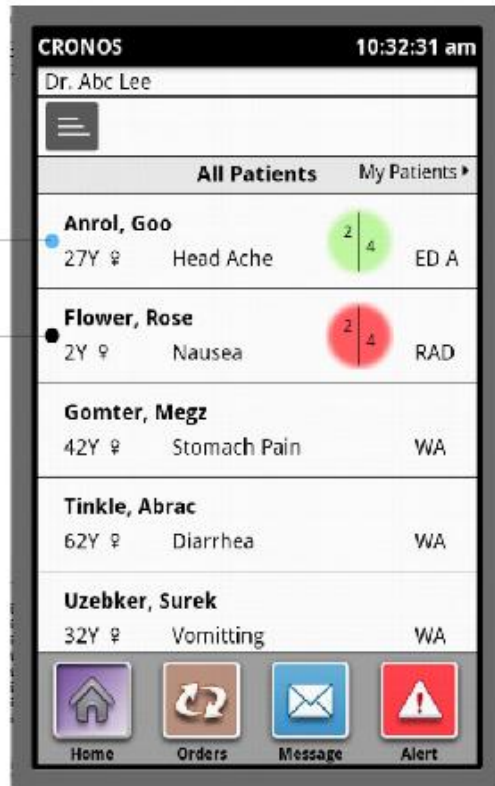
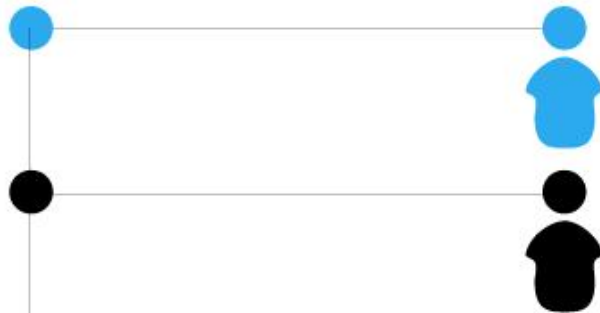
User task: Identify the age of the only male patient listed.



Sample was only **60% accurate** at identifying patient by gender

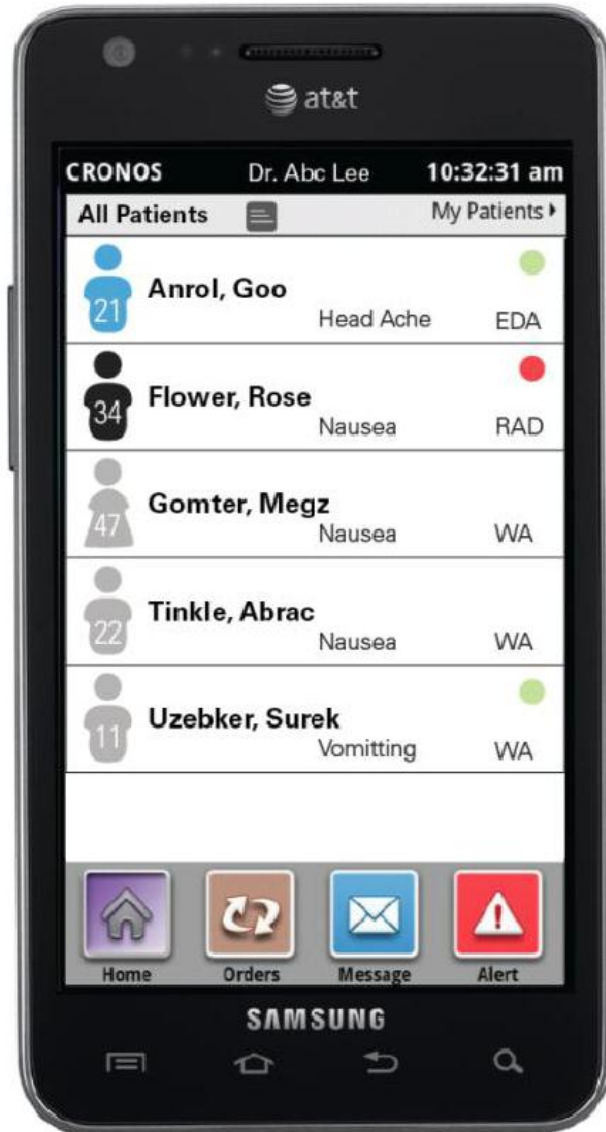
Time to first fixation on correct gender symbol:
7.2 seconds

Time to identify gender of patient:
11.4 seconds

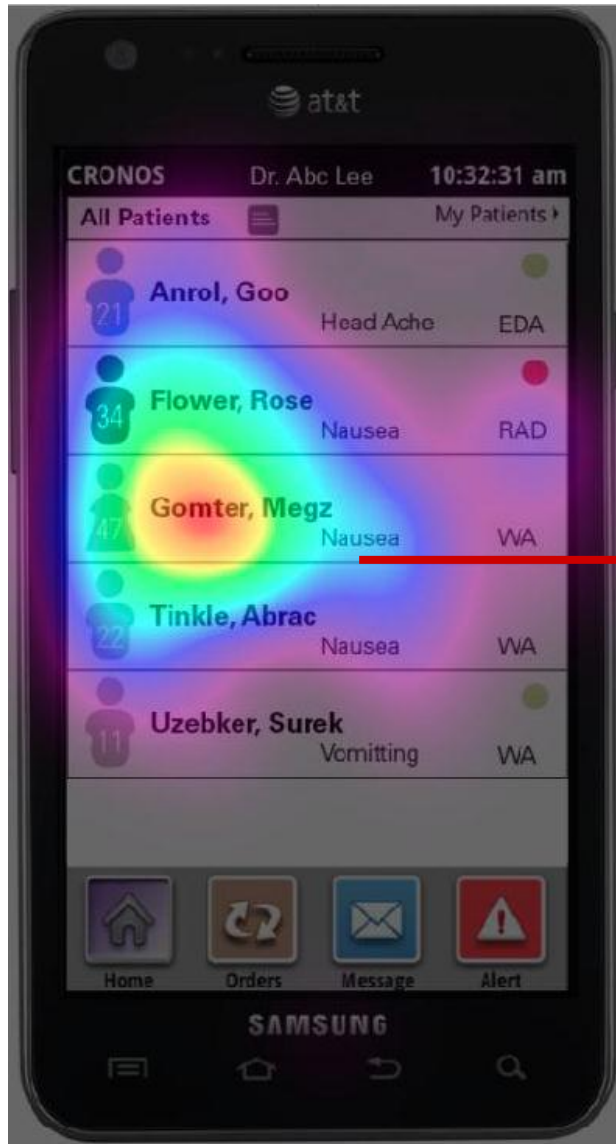


Giving a face to the patient

Icons can improve patient identification



User task: Identify the age of the only female patient listed.



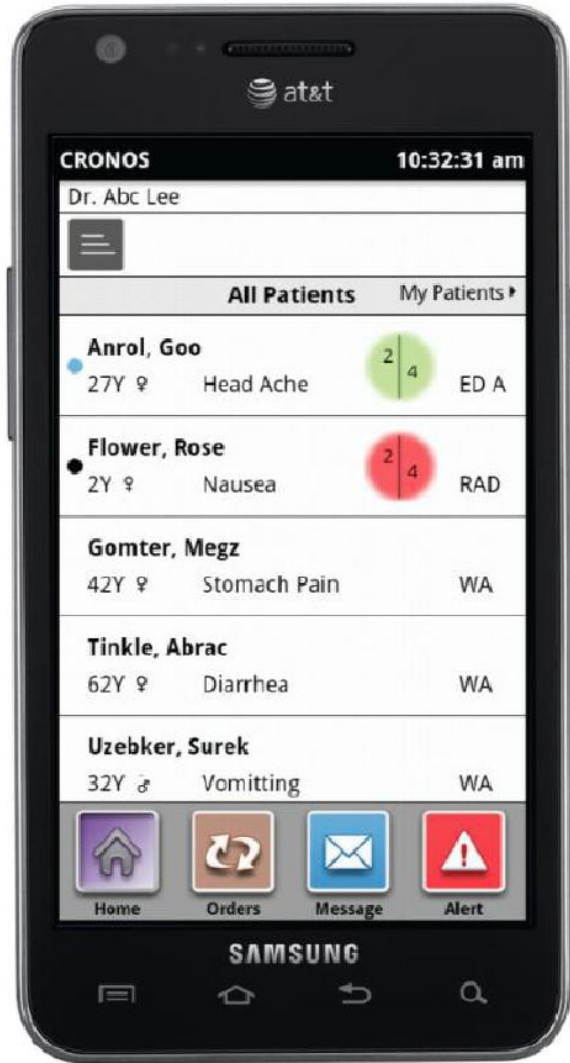
Sample was **90%**
accurate at
identifying patient by
gender
30% improvement

Time to first fixation
on correct gender
symbol:

4.2 secs
42% faster

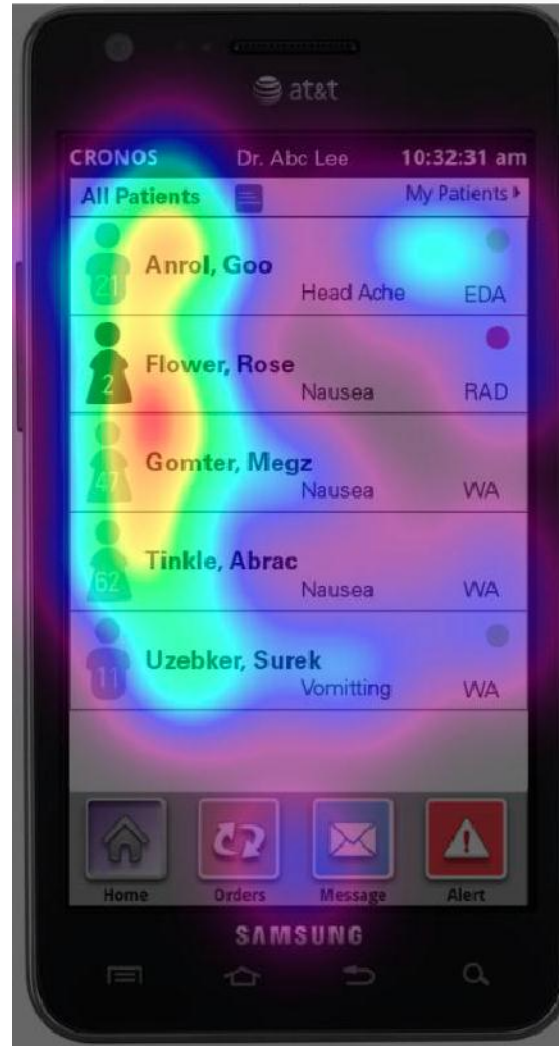
Time to identify
gender of patient:

8.1 secs
29% faster



Patient priority means patients come first

Arrange information to guide a doctor's gaze through patients



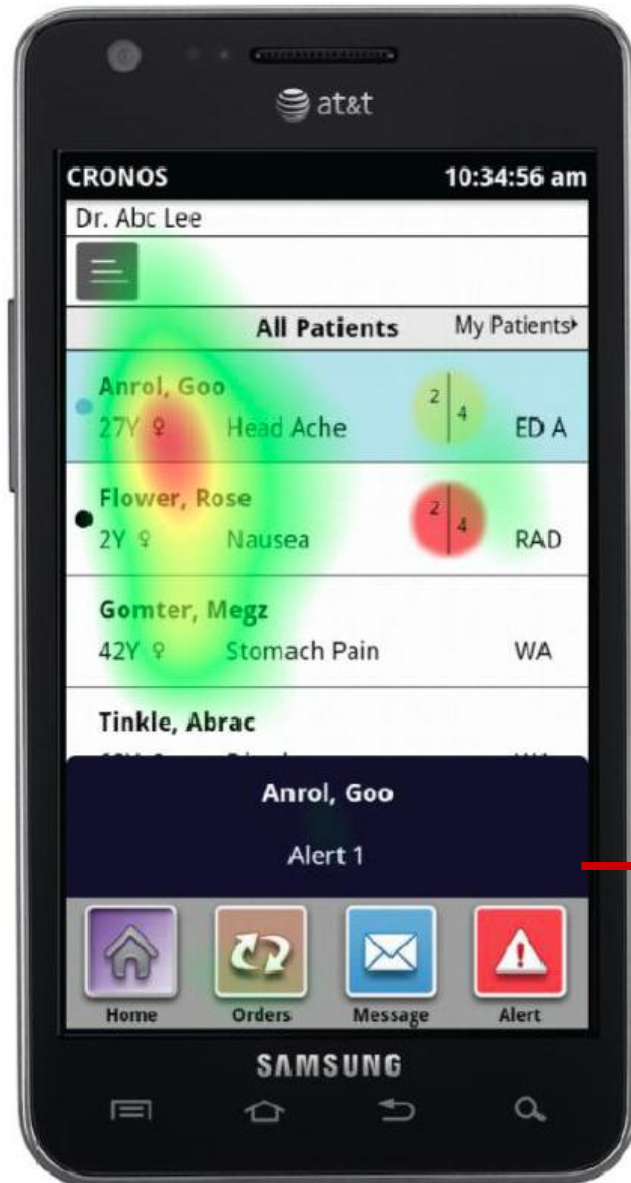
Patient priority means patients come first

Icons can help doctors to quickly identify patient information



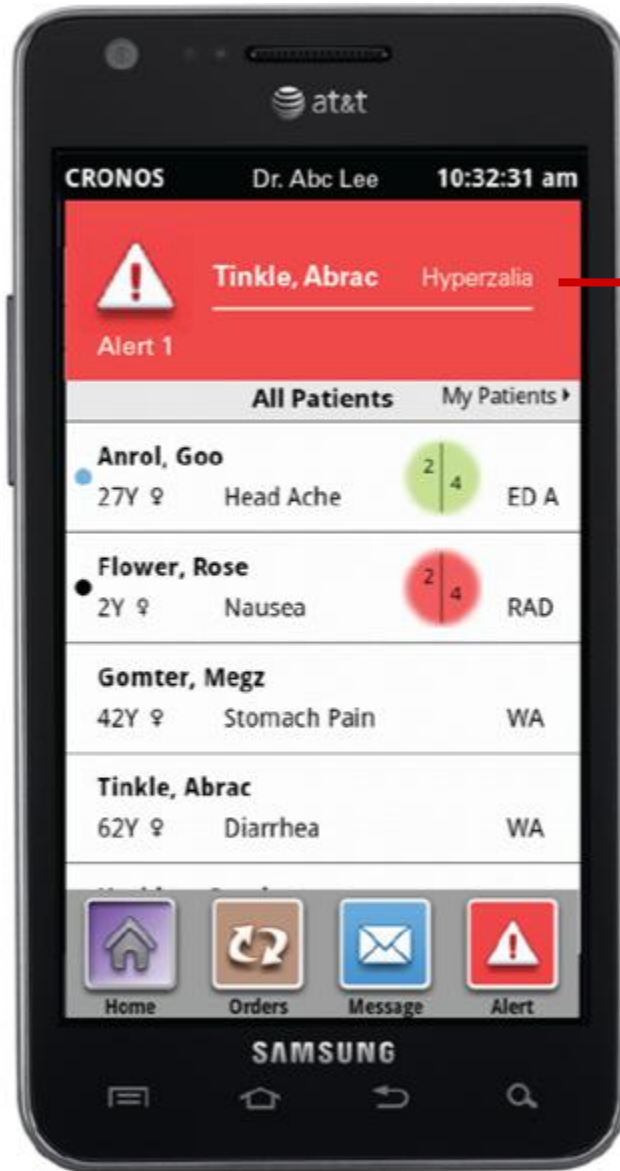
Information hierarchy should be accurately reflected by design

Survey and eye tracking suggest the current alert is difficult to find and not viewed as urgent



Information hierarchy should be accurately reflected by design

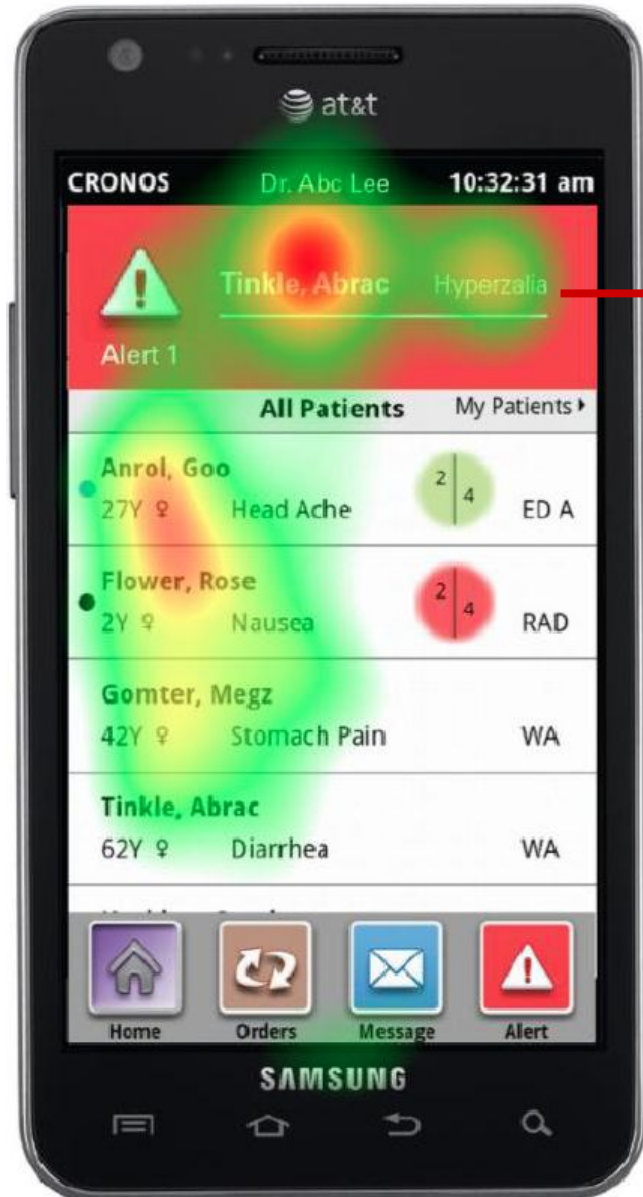
Survey and eye tracking suggest the current alert is difficult to find and not viewed as urgent



Location on top reflects its importance.

Red color and symbol match the alert button and are associated with urgency.

Important information listed.



Location on top reflects its importance.

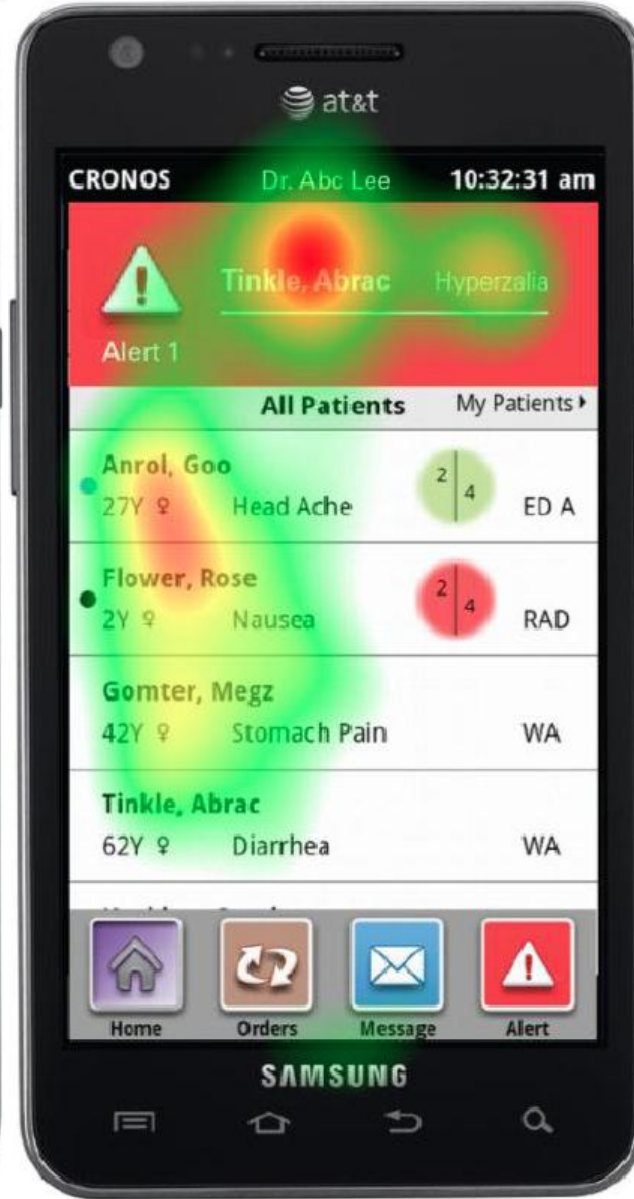
Red color and symbol match the alert button and are associated with urgency.

Important information listed.

60% of sample did not notice bottom blue alert

Avg. Time until first fixation on alert:

5.3 s



100% of sample noticed top red alert

Avg. Time until first fixation on alert:

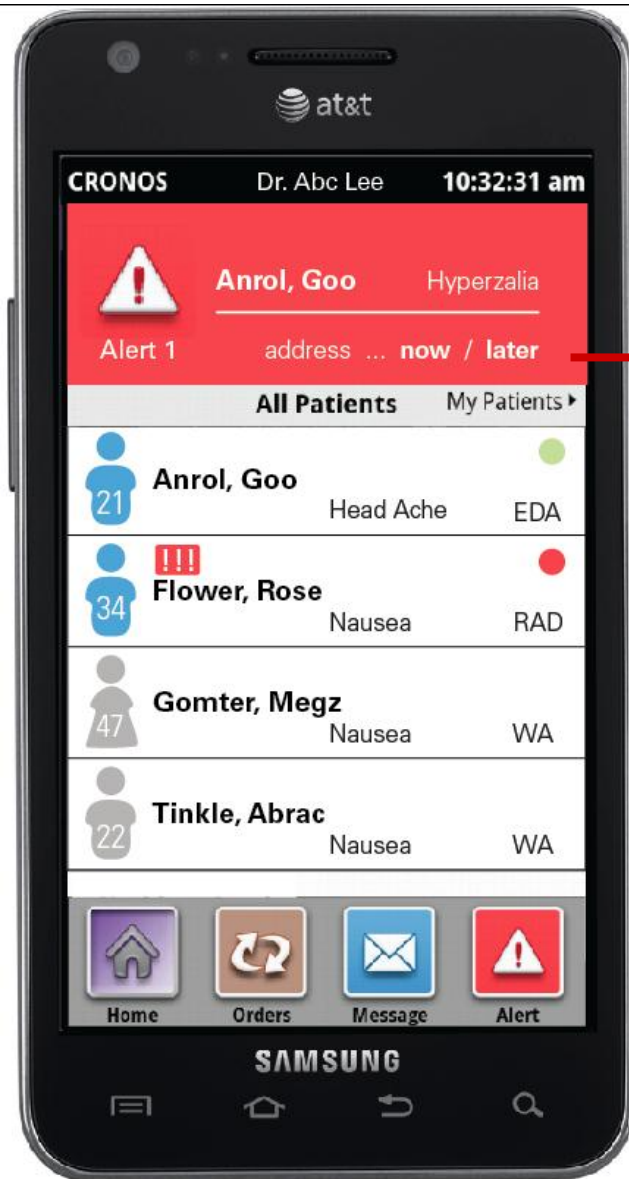
1.9 s



Visual alerts work only when the doctor looks at the phone.

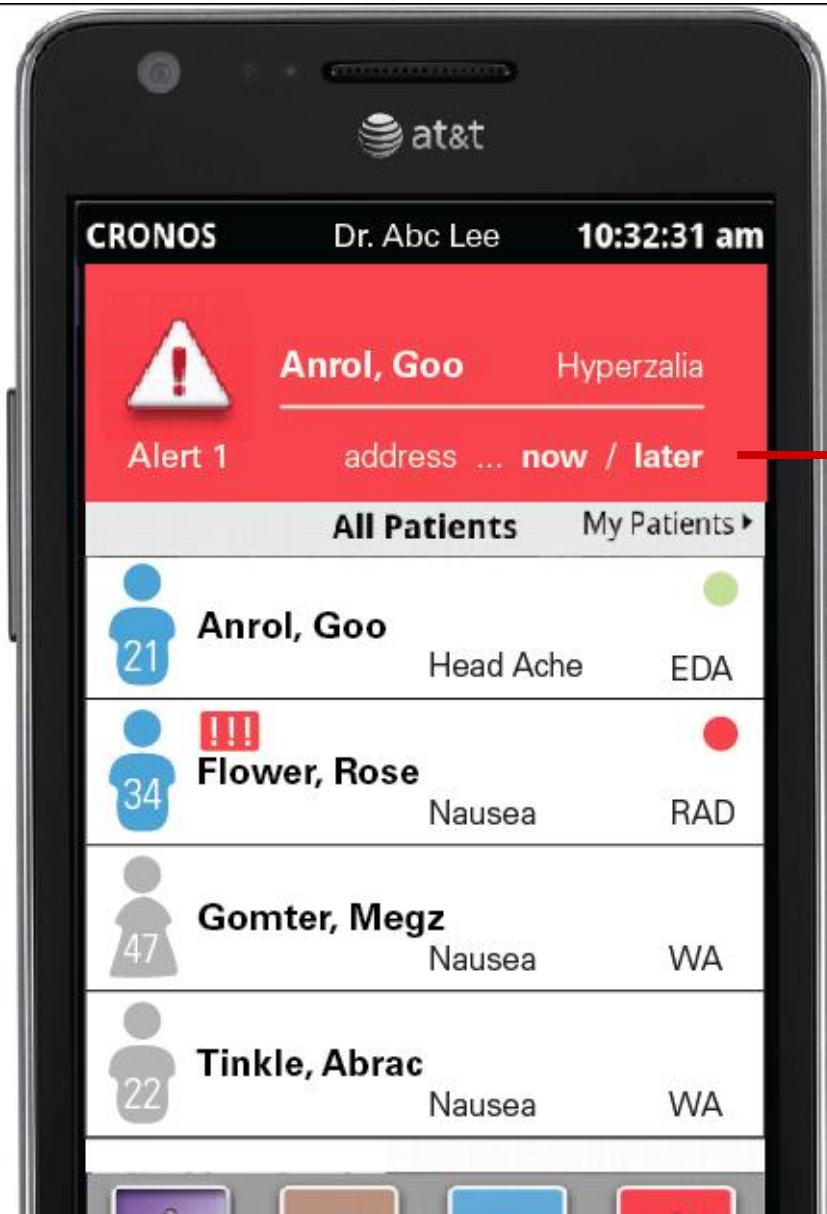
Consider vibration or sound to alert doctors to urgent information without having to look at phone.

Possibly connected to location.



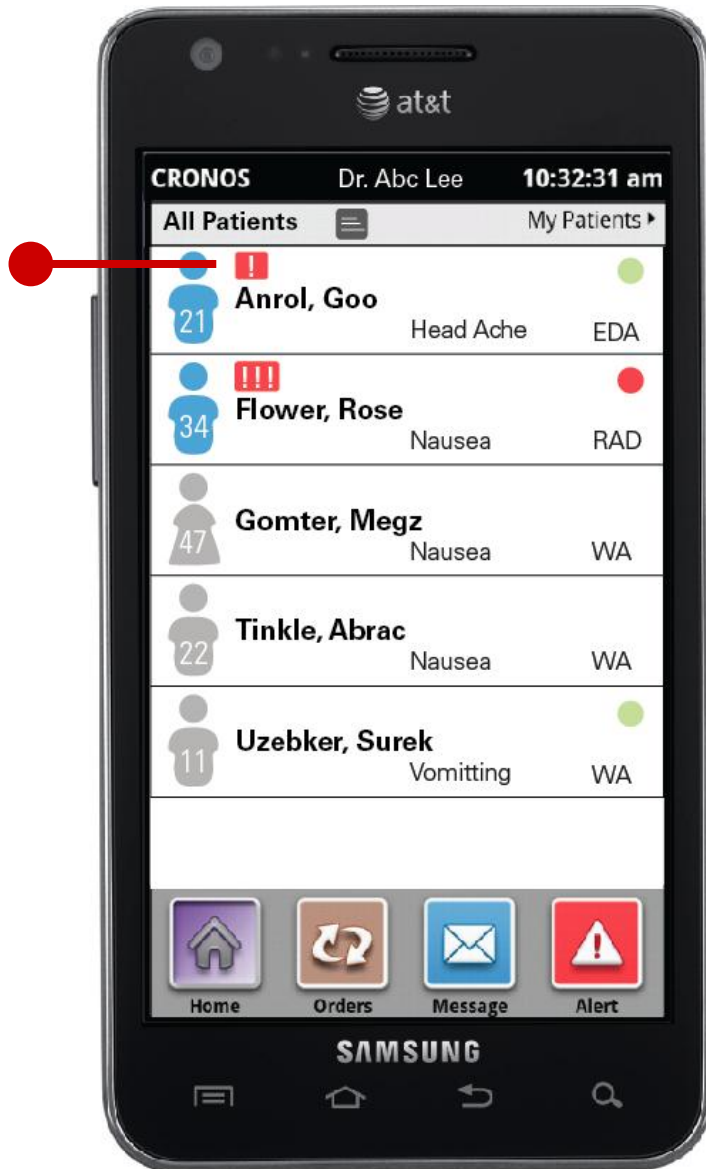
Only so much information
can be processed at once.

Consider including function
to address alert later.



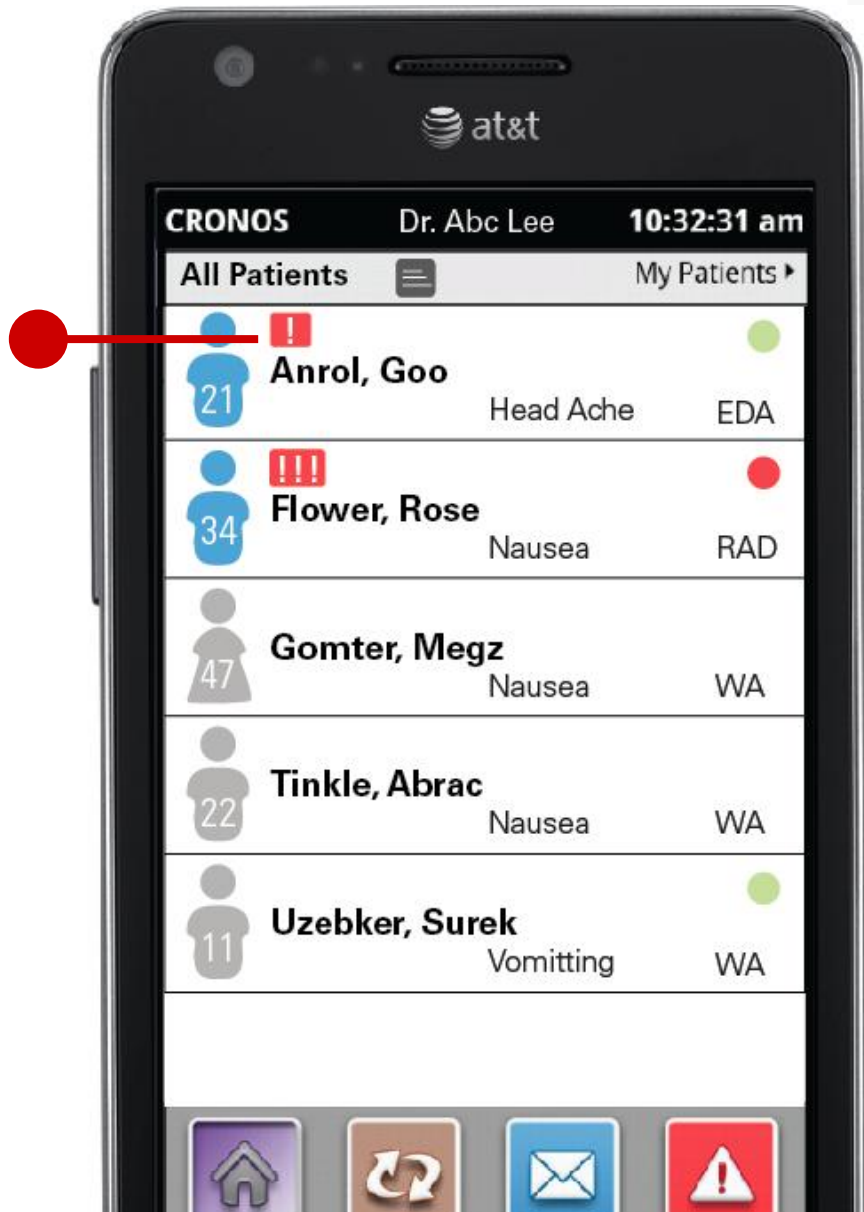
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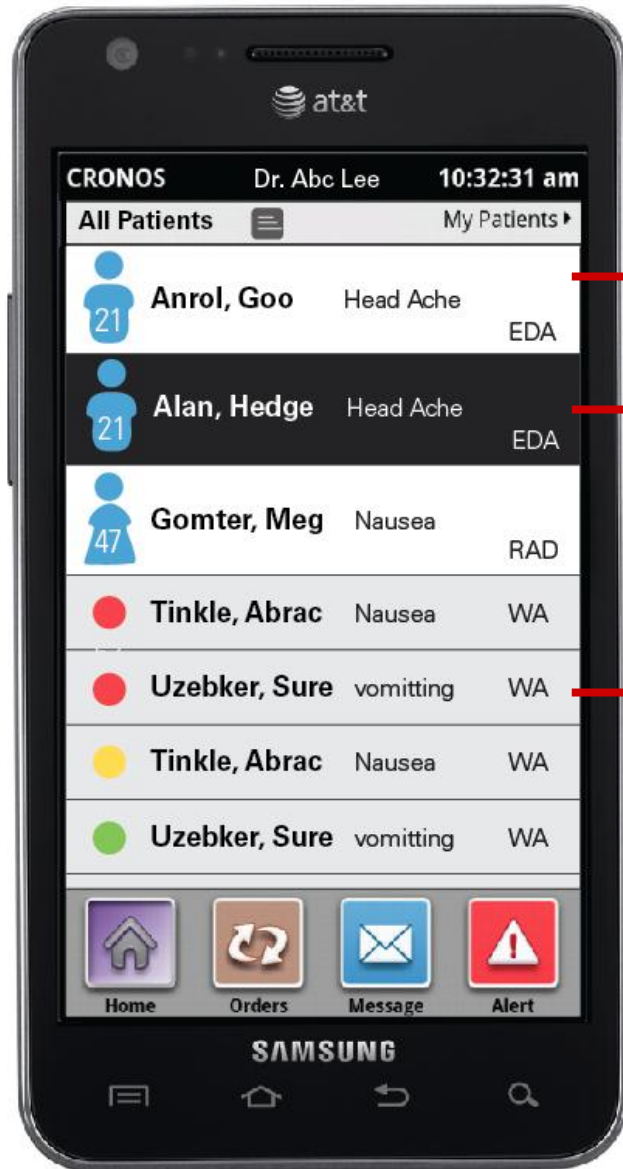
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Only so much information can be processed at once.

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My patients shown
at top (with icons)

Inverted black
highlight

Patient triage,
weighted by acuity

Visual Clarity



Patient Priority

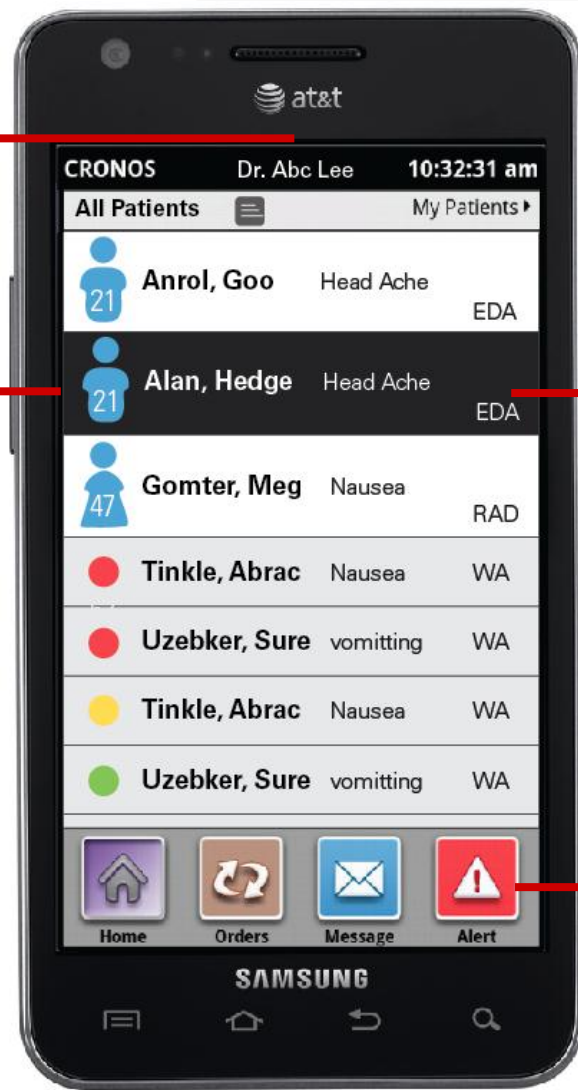


Visual Clarity



Consistency: Layout

Consistency: Terminology



Priority: Alerts



