
FINAL PRESENTATION

Time is Brain
Stroke Assessment and Treatment App

PROJECT SUMMARY

Project Description, Problems and Solutions

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The Stroke Assessment and Treatment (Time is Brain) App is a timesaving tool for determining administration of the stroke drug, tPA, to stroke patients. The availability of the app to the medical professionals serving the stroke patient would cut down on delaying precious time to administer tPA, which can only be delivered during the first three hours of onset of a stroke.

The tPA Checklist App is a real world application, specifically, a productivity application. The stroke app would provide tools that would help individuals who use it to complete an actual task – if and how much of the stroke medication would be administered to the stroke patient. The idea is to cut down on time spent calculating whether or not to administer, and calculation of the dosage. The app will include some educational elements such as the National Institute of Health (NIH) Stroke Scale.

The problem that I'm trying to solve for my intended users is efficiency. The main area of concern for health professionals that serve stroke patients is timely calculation of whether or not they can administer the stroke drug tPA to the patient. If yes, then they need to calculate the individualized dosage. If not, they move on to other stroke indication evaluations and procedures, including evaluative monitoring.

I have had first-hand experience seeing how nurses and doctors use tablets and computers in close proximity to the patients to collect information. Even the paramedics took all of my information digitally on a tablet.

The payoff would be an even more efficient way of serving the stroke patient – since time is of the essence for stroke patients in particular - every second not treated, that is more brain damage to the patient. The Stroke Assessment and Treatment App can potentially be a life-saving app.

The ultimate outcome of having a more efficient evaluative system to determine the treatment of the patient would lead hopefully to lives saved, but this app in particular would be for determining the care route that the healthcare staff would take. Whether or not the patient can in fact even be administered tPA. To be able to determine if the patient can receive tPA sooner would be optimal (tPA is a time sensitive medication – can only be administered within the first 3 hours of stroke onset.)

If not, the app could be used to monitor other facets of the stroke patients' vitals. Things such as the NIH stroke scale would be available for use readily, as well as pocketcards – which have information about a plethora of things that doctors and nurses reference.

PROJECT SUMMARY

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User Requirements Analysis

Having it all available in the same place adds to the efficiency.
(per stroke nurses.)

Right now, nurses and doctors who tend to stroke patients use a paper checklist to complete the tPA analysis for stroke patients. This app would be used as a timesaving tool for determining administration of tPA to stroke patients, which would ultimately save lives. The availability of the app to the medical professionals serving the stroke patient would cut down on delaying precious time to administer tPA to stroke patients who would benefit from the medication.

The problems:

- Save lives of Stroke patients
- tPA checklist is in paper form – time consuming, checklist is cumbersome to fill out and calculate
- Stroke assessment tools are in several locations (NIH stroke scale, tPA checklist, pocketcards, dosage calculator)

The tPA Checklist App is an application that would work in real time for the health professionals. The stroke app would provide tools that would help individuals who use it to complete an actual task – if and how much of the stroke medication would be administered to the stroke patient. The idea is to cut down on time spent calculating whether or not to administer, and calculation of the dosage. Including some educational elements such as the National Institute of Health (NIH) Stroke Scale, would make the usage of this app wider than the scope of just a checklist.

In so far as I have researched, an app of this type exists but with limitations – so to create it would bring the process of deciding whether or not to administer tPA into the current technology of the medical setting. It would make the entire checklist for tPA much easier to access and use...the fact that it is in an app is an innovation. Its usefulness is in the ease of inputting the information. The only information that would be entered into the app would be the pertinent stroke and vital information about the patient. Ultimately it is a time saving app for medical professionals who manage the administration of tPA: nurses, PAs and doctors in hospital settings who attend to stroke patients.

I will continue to do user interviews to gain a better scope as to how each health professional may use this app. I would also like to interview stroke patients as well as their healthcare providers, such as general practitioners, who may indirectly use the app.

TARGET AUDIENCE

Description and Profiles



The specific target audience is nurses, PAs and doctors in hospital settings who tend to stroke patients. The stroke drug, tPA. The nurses attending the stroke patients would be the frontline people who would utilize the app. The app information may need to be approved by a doctor before administering to the patient. This would mean that the nurse and doctor would both utilize the app. The app may also be utilized directly by the doctor attending the patient.

Other users may include Physicians Assistants who are at the hospital. The director of the stroke centers (also MD) may utilize the app for approval and to keep the technology updated, although this would be on a smaller scale.

USER PERSONAS

Anthony Edmunds, RN

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Anthony Edmunds, RN

Male 32 years, Nurse

Technical Comfort Level: High; Tablet, PC, Android phone

Key Attributes:

- Focused, continually learning
- patient oriented, wants to provide the highest quality of care
- On stroke board at UPMC
- Frontline of stroke care, concerned with providing quick and accurate care to stroke patients

How would SAT help:

- app would house all the stroke calculation materials and quick reference guides
- app would be available on all tablets, allowing more than one copy of the info to be available to multiple nurses/PAs
- Nurses would have checklist readily available, and the doctor could cross-check right in the app

Anthony is a father who lives in the city with his wife and three children. He is a motivated nurse, and is always looking for ways to increase his specialties with patient care. Anthony is a stroke nurse at Mercy Hospital, Pittsburgh, PA, and has utilizes the paper checklist procedure that the hospital has in place for administering tPA.

"It would be great to have an app that can be used as a readily available assessment tool. Physicians, nurses and ancillary staff already use mobile smart devices in the hospital setting, so it would be great to have a specialized app instead relying on the paper version."

USER PERSONAS

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Rodney D. Bell, MD



Rodney D. Bell, MD

Male, 57 years, Doctor of Neurology - Cerebrovascular/Critical Care (Stroke)

Technical Comfort Level: Moderate; iMac, iPhone

Key Attributes:

- Leadership role
- Goal oriented, hard worker
- Takes feedback from his stroke nurses and implements into stroke patient care

How would SAT help:

- app would house all the stroke calculation materials and quick reference guides – all in one location
- immediate access to pocketcards, NIH stroke scale and other stroke indication checklists – efficiency

Dr. Bell is the medical director of the Stroke Center at Johns Hopkins with expertise in the diagnoses, treatment and prevention of stroke. He is a family man, taking time to visit and spend time with his grandkids. He keeps in touch with family by utilizing iPads and Facebook, making him moderately computer savvy. His favorite way to communicate with his children and grandkids is Google Hangout and FaceTime.

"What we need to do is work harder for our patients. If an app can speed things along in their recovery, then lets look into it."

USER PERSONAS

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Denise Taylor, MD



Denise Taylor, MD

Female, 43 years, Neurologist

Technical Comfort Level: High; Macbook Pro, iPhone

Key Attributes:

- Experienced physician
- Technologically Savvy
- Double checker – will look over other's work to be sure it is done correctly

How would SAT help:

- streamline cross-checking info
- allow for more accurate analysis by utilizing more than one stroke evaluation system

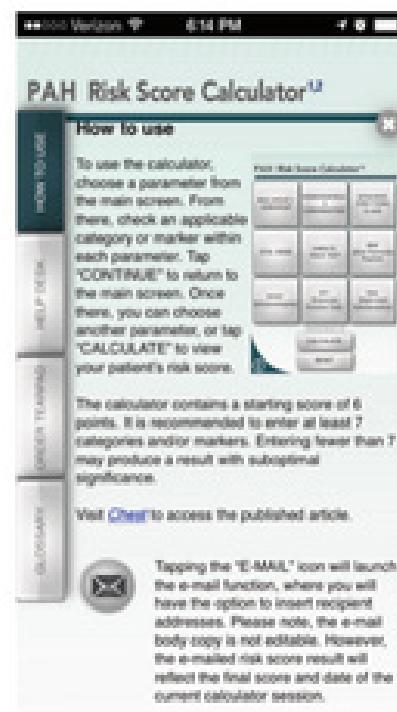
Dr. Taylor has special medical interests in women's health, treatment and prevention of stroke. Dr. Taylor has worked at the Stroke Center at UC San Diego for the past 40 years. Dr. Taylor is single and lives in city in which she works. She is upbeat and active and enjoys outdoor and beach activities, painting and reading. She is technologically savvy and is constantly looking for more efficient ways to approach hospital procedures.

"I would like an quick and easy way to double check the nurse's calculations. As they say, time is brain."

COMPETITIVE ANALYSIS

Main Competitors

PAH



FEATURES/FUNCTIONALITY

The PAH Prognosis app is a medical app that is utilized in the form of a checklist in order to reach a prognosis for a particular medical condition. The app begins with a disclaimer that cannot be bypassed without answering. If yes, the user may continue on using the app. One of the main criteria for utilizing the app is that the user acknowledges that they are a medical professional. After this, the app goes directly into the checklist.

The checklist will not allow for an answer unless a minimum of categories is completed. After a category is completed, it is highlighted green on the home page. This is a simple way to alert the user that they haven't completed the correct amount for a completed diagnosis.

The user would be required to have a basic knowledge of how to take answer a survey-type questioner as an app. I am not familiar with the type of medical condition that the app is used for, but I am familiar with the colors that the app uses for some of its checklists. There are green, yellow and red boxes to be checked. Each is clearly marked and easy to follow.

WEAKNESSES

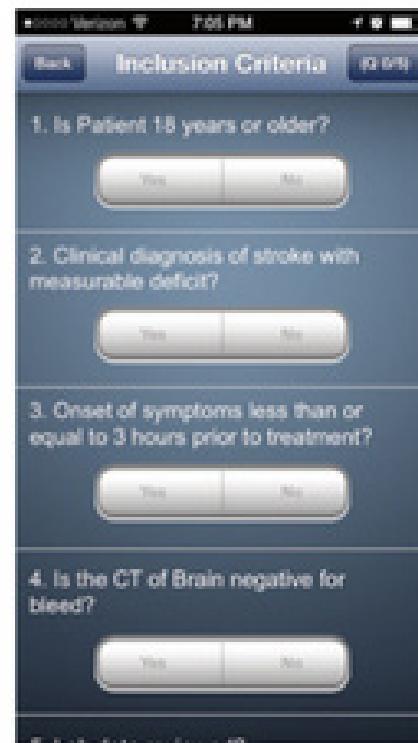
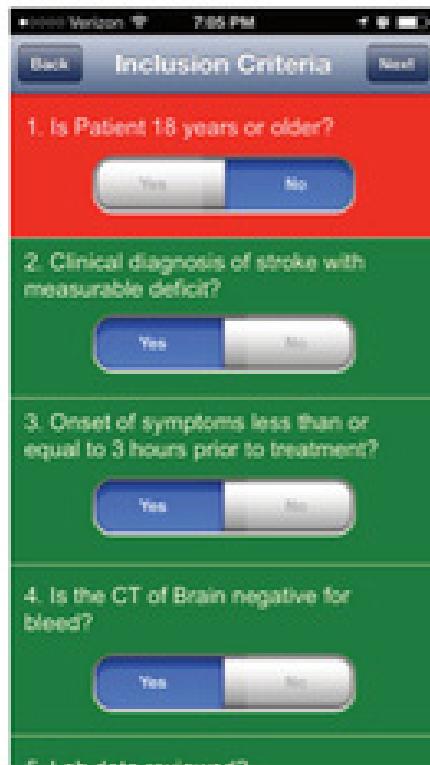
- There isn't a guide as to how to answer the questions
- You can not continue onto any other portion of the app until enough categories are completed.

COMPETITIVE ANALYSIS

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Main Competitors

BRAIN ATTACK



FEATURES/FUNCTIONALITY

This app gives the user the immediate option to go to the tPA tool or to access the NIH stroke scale. This is especially nice since the user does not have to complete any of the assessments or scales to access this information. However, it is not easy to separate from the tPA tool to go back to the NIH stroke assessment scale.

The user would be required to have a basic knowledge of how to take answer a survey-type questioner as an app. There are green and red displays that highlight the entire question of the tPA survey that immediately indicate to the user that the patient may or may not be eligible for the medication. This is a major benefit because the time it takes to go through the entire checklist could be cut down when that information is immediately available. Each question of the checklist is clearly marked and easy to follow.

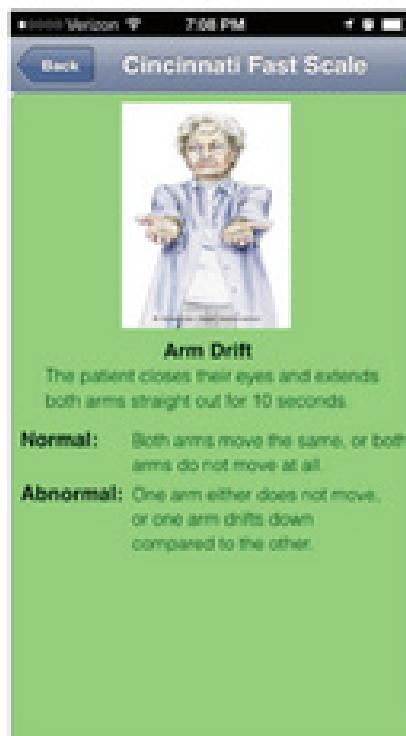
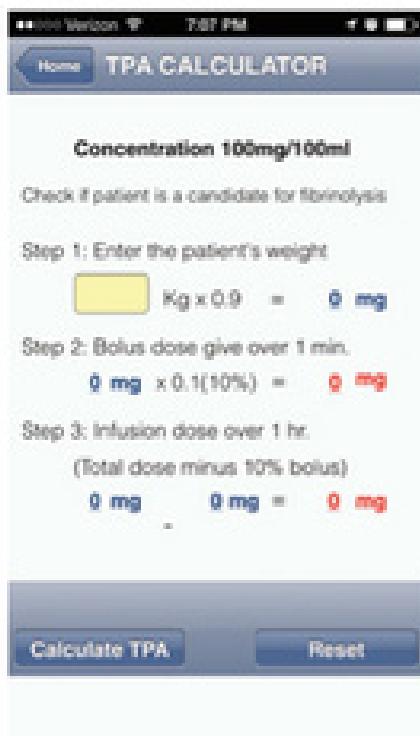
WEAKNESSES

- Does not provide dosage information

COMPETITIVE ANALYSIS

Main Competitors

STROKE TOOLS



FEATURES/FUNCTIONALITY

This app gives the user the immediate option to go to the tPA calculator, Cincinnati Stroke Scale, Glasgow Coma Scale, NIH Score, AHA Stroke Algorithm, Prx in Nontraumatic Coma or About information. This is the only screen to navigate from.

The user would be required to have a basic knowledge of how to take answer a survey-type questioner as an app. There are no indicators to assist the user in completing the surveys. The app does not go beyond the usual iOS graphics.

WEAKNESSES

- No way to go back from about screen
- Images and overall design is very dated

CONTENT INVENTORY

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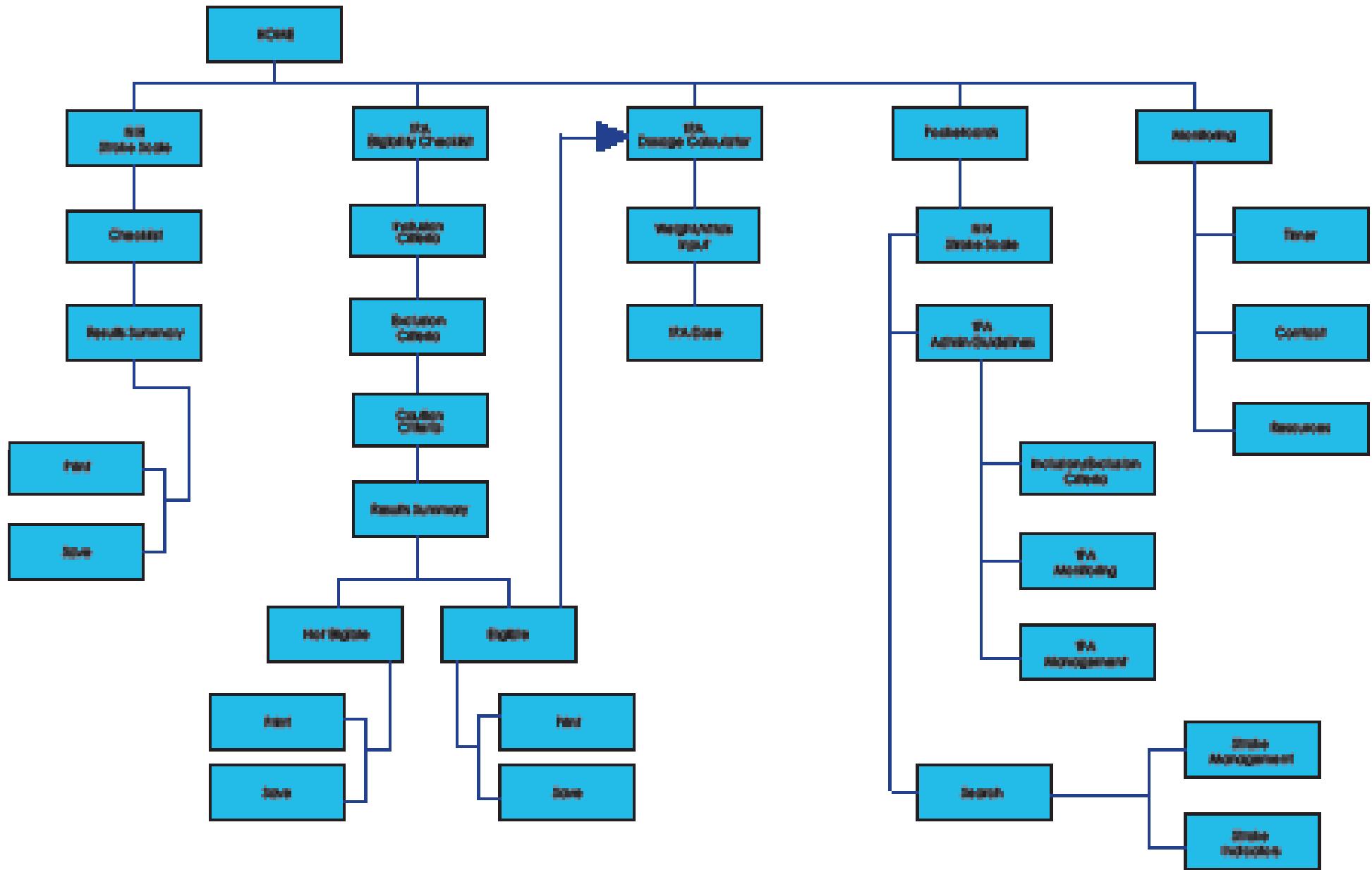
UI Area	Content Item	Task	Have	Need	Notes
Home Page/ Function selection	SAT logo	Vector graphic		X	
	NIH Stroke Scale icon	Vector graphic		X	
	IPA eligibility checklist icon	Vector graphic		X	
	IPA dosage calculator icon	Vector graphic		X	
	Background	Vector graphic (watermark)		X	
NIH Stroke Scale landing page	Checklist icon	Vector graphic		X	
	Blank checklist icon	Vector graphic		X	
NIH Stroke Scale Checklist page	Blank NIH Stroke Scale	text	X		
	NIH Stroke scale icon	Vector graphic		X	
	Checklist form	Checklist form fields – using established NIH Stroke Scale info	X		
	Checklist fields to checkmark/select	Define selection fields		X	Select if pt meets criteria of category
	Continue button	Vector graphic			
	Summary button	Vector graphic		X	
Checklist Summary page – with total	Checklist summary	Text/algorith calculation		X	
	Print option button	Vector graphic		X	
	Email option button	Vector graphic		X	
IPA eligibility checklist – landing page	Disclaimer	text		X	
	Accept button	Vector graphic		X	
	Not accept button	Vector graphic		X	

CONTENT INVENTORY

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tPA eligibility checklist	Inclusion criteria – form	Checklist form fields – using established tPA inclusion criteria list	text	form	
	Exclusion criteria – form	Checklist form fields – using established tPA exclusion criteria list	text	form	
	Caution criteria – form	Checklist form fields – using established tPA caution criteria list	text	form	
	Checklist fields to checkmark/select	Define selection fields		x	Select if pt meets criteria of category
	Continue button	Vector graphic		x	
	Submit button	Vector graphic		x	
	Summary results – calculation results	Text/algorithm calculation		x	
	Patient eligibility page - eligible	Vector graphic		x	
	Patient eligibility page - not eligible	Vector graphic		x	
	Print option button	Vector graphic		x	
tPA dosage calculator page	Email option button	Vector graphic		x	
	tPA dose calculator	Calculation script		x	
	tPA dosage calculator form	text		x	
	tPA vitals - fields	Define fields for data entry		x	
	Dosage results	Text/algorithm calculation		x	
Web Hosting	Submit button	Vector graphic		x	
	Typeface	Web loaded font		x	Typekit
	Domain name	SATapp website/App name		x	SATapp – site to accompany app
	Domain host	Web hosting co		x	Bluehost – have yet to purchase domain name
	Content management	Phonegap/drupal/squarespace		x	
	Platform	iOS		x	

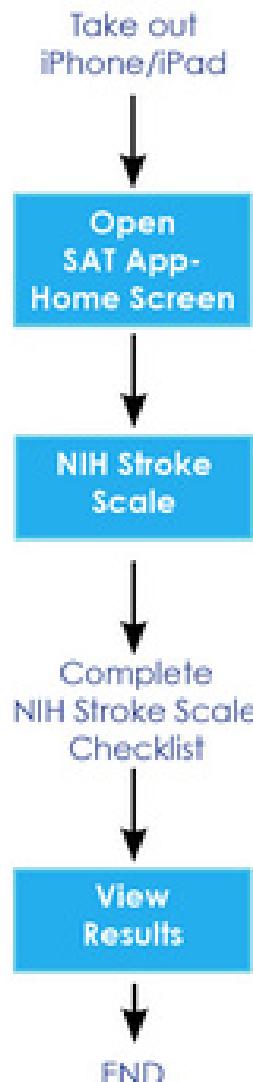
INFORMATION ARCHITECTURE | 13



USE CASE SCENARIOS & TASK FLOWS

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Use Case 1



Goal: Conduct a neuro-assessment using the NIH Stroke Scale
Primary Actor: Nurse Instructor/Nursing Student

Success Scenario: A group of nursing students is accompanying a nurse instructor on a clinical rotation in a hospital. The Nurse instructor informs the group that he will be conducting a neuro-assessment of a patient and he would like the group to follow along using the NIH stroke scale. The nursing students retrieve their iPhones and iPads and open the SAT app. They navigate to the NIH stroke scale and complete the checklist along with the nurse instructor who is demonstrating the proper way to perform the neuro-assessment evaluating the patient's stroke progression, symptoms, and/or evolution.

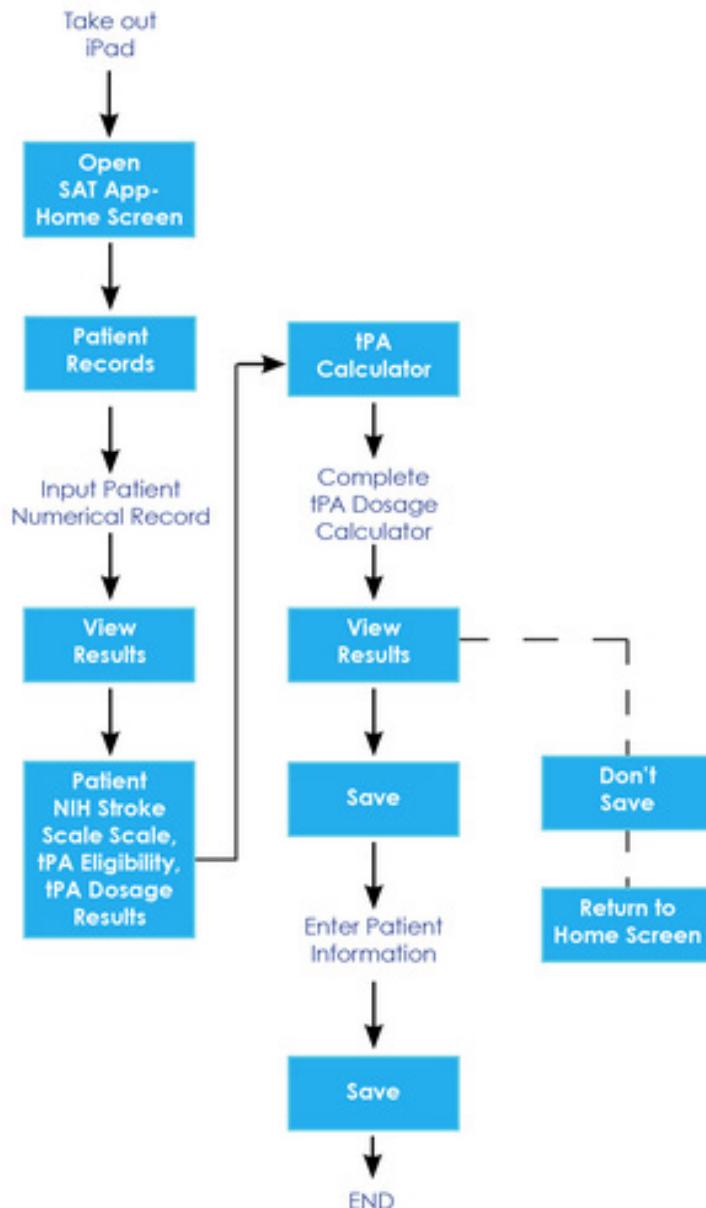
Task Analysis:

Nurses uses iPad/iPhone to open SAT app
Choose NIH stroke scale
Fill out the NIH stroke scale checklist by answering questions chosen according to programmed selection paths and patient specifics
Choose view results
Reviews NIH stroke scale results

USE CASE SCENARIOS & TASK FLOWS

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Use Case 2



Goal: Confirm the correct tPA dosage ordered by the attending doctor
Primary Actor: Experienced Nurse

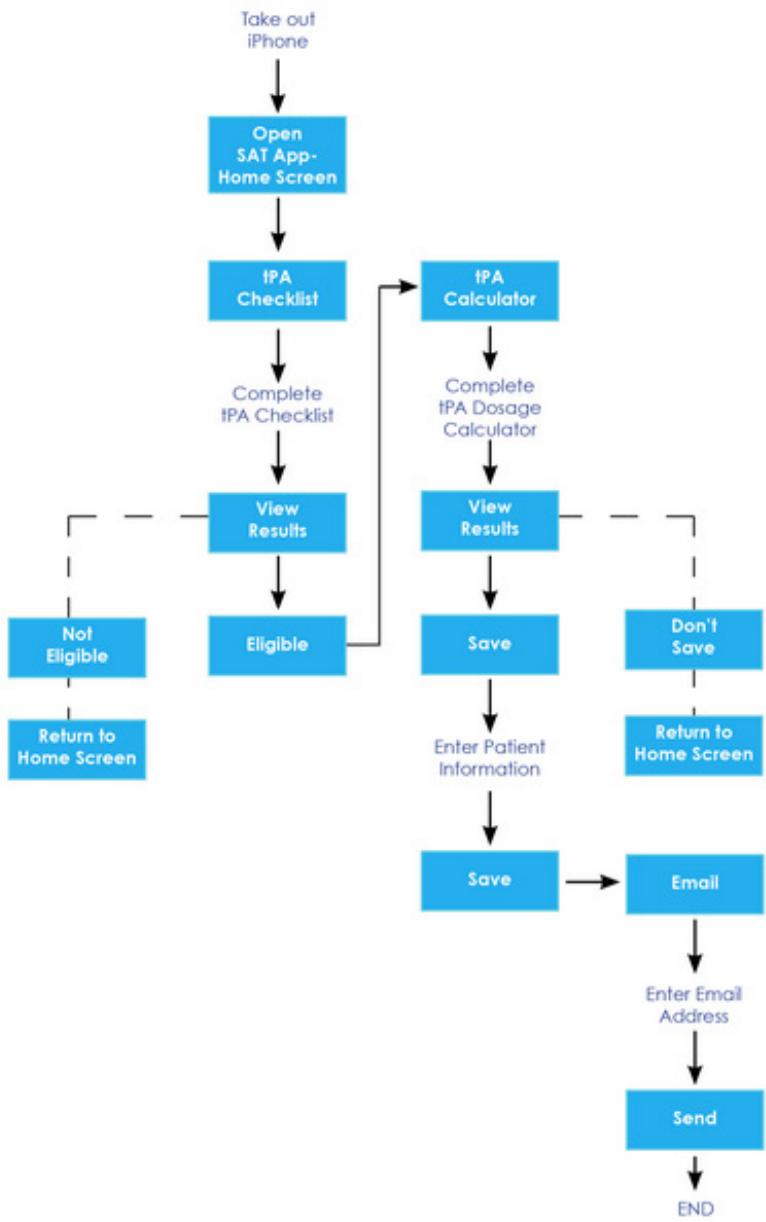
Success Scenario: An experienced nurse is given an order by the emergency room attending doctor to administer the stroke medication, tPA, to an 85 year old African American stroke patient with a history of COPD, sleep apnea, diabetes type II and obesity. The nurse is diligent to check the doctor's orders and follows the 5 rights of medication administration, (right medication, right dose, right time, right route, and right patient) and double-checks the tPA dosage ordered by the attending doctor. She uses the tablet at the nurse's station to open the SAT app. She checks the initial dosage calculation that is saved under patient records. She then opens the tPA dosage calculator and completes the calculation with the patient's information. After confirming the dosage, she administers the medication according to the attending doctor's orders.

Task Analysis:

- Nurse uses iPad to open SAT app
- Chooses patient records
- Input patient information/numerical patient code
- App displays NIH Stroke scale results, tPA checklist results and tPA dosage
- Chooses home screen
- Chooses tPA dosage calculator
- Inputs patient information into tPA dosage calculator
- tPA dosage results display
- Reviews tPA dosage result
- Presses save to patient/patient numerical code
- Administers tPA dosage to patient

USE CASE SCENARIOS & TASK FLOWS

Use Case 3



Goal: Use the SAT app to complete checklist for tPA administration
Primary Actor: Intern in Emergency Room (Doctor)

User Scenario: A call to 911 brings a 66-year-old female smoker to the Emergency Room. EMS use the Chicago stroke scale to determine patient is having a stroke and brings patient to the nearest primary stroke center emergency room. Once the patient arrives, the Intern serving to the patient completes lab work within the first 35 minutes of arrival (CT scan, blood coagulation study, history & physical, and contra-indications to tPA). The Intern retrieves his iPhone from his pocket and opens the SAT app. He completes the tPA checklist and determines the patient is eligible for tPA. He then uses the SAT app's tPA dosage calculator to determine the proper dosage of tPA for the patient. Intern saves patient information in the app and writes order for tPA dosage administration and gives to nurse.

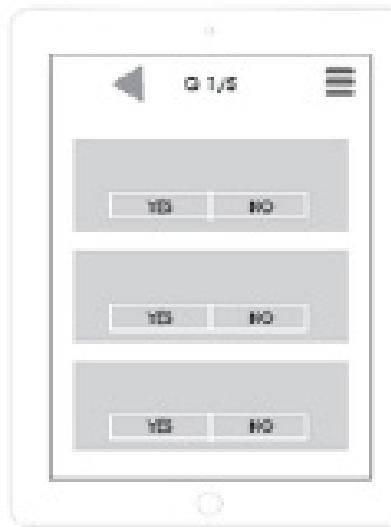
Task Analysis:

- Intern takes out iPhone
- Opens SAT app
- Select tPA checklist
- Reviews checklist result – can administer
- Chooses go to tPA dosage calculator
- Inputs patient information into tPA dosage calculator
- tPA dosage results display
- Reviews tPA dosage result
- Chooses save and inputs patient information in patient records – inputs patient numerical code
- Chooses save
- Emails order to nurse's station
- Completes tPA checklist: fill out the tPA checklist by answering questions chosen according to programmed selection paths and patient specifics
- Choose view results

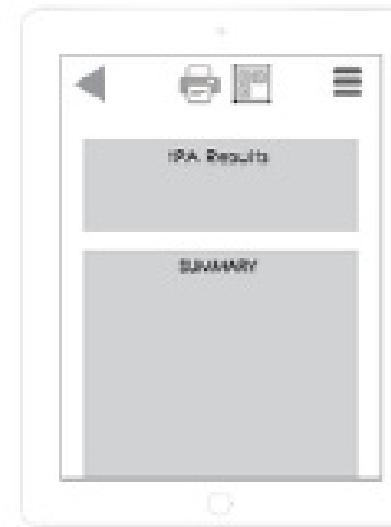
WIREFRAMES

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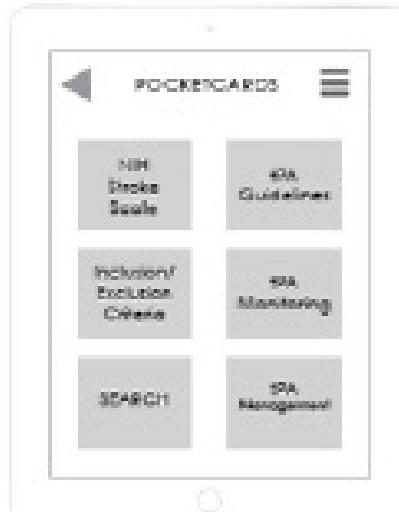

Main Menu Screen



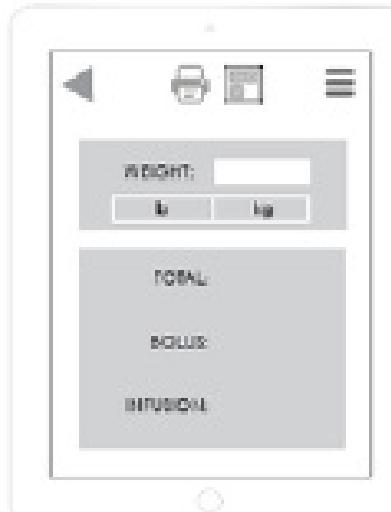
tPA Eligibility Checklist



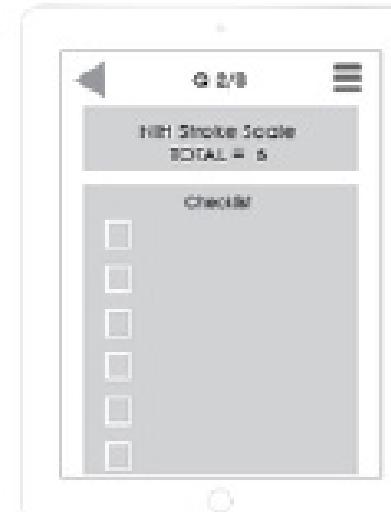
tPA Results Summary



Pocketcards



tPA Dosage Calculator

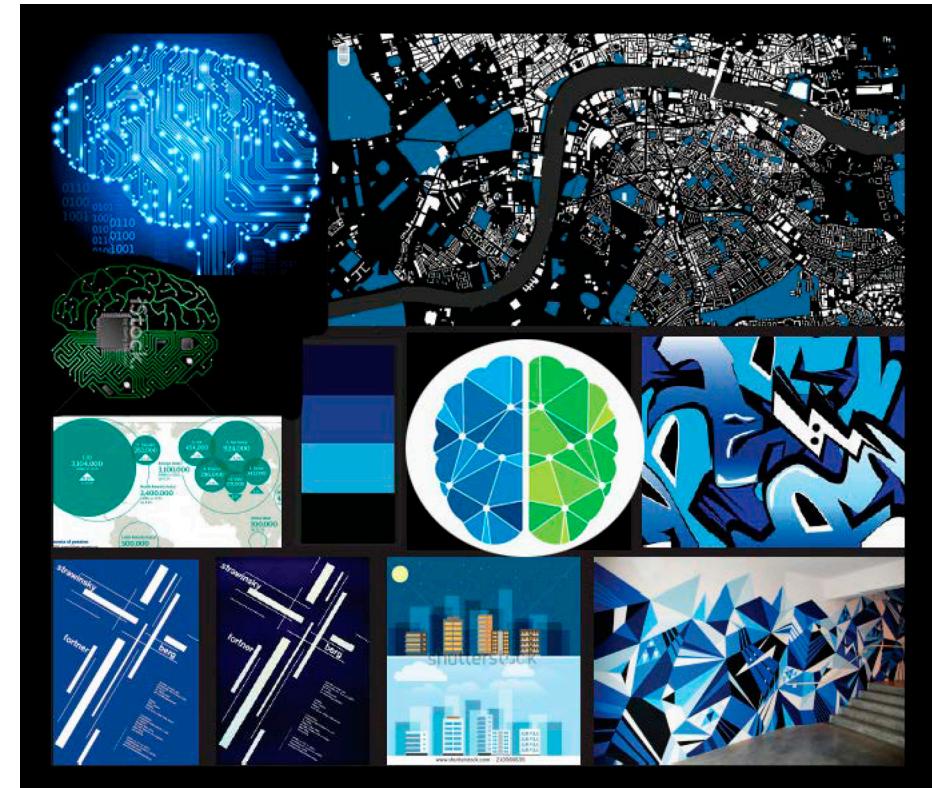


NIH Stroke Scale Checklist
(summary total at top)

VISUAL DESIGN

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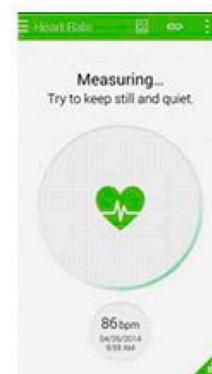
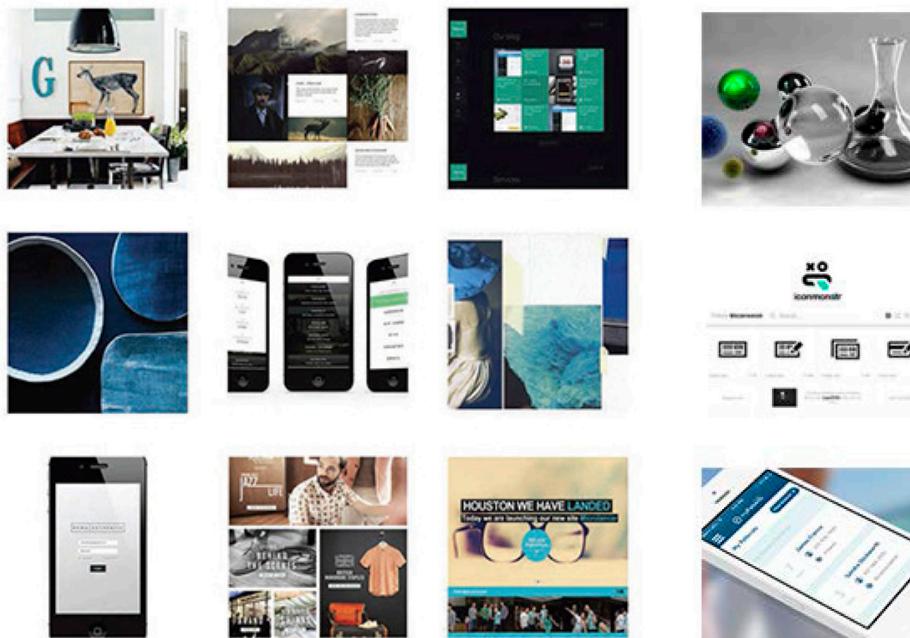
Moodboards



VISUAL DESIGN

Moodboards

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MOOD BOARD

Style

Flat, modern style of contemporary app design. Medical - oriented color scheme of blue tones that lend a calm feeling under stressful conditions.

Color



Typography

HEADLINES

Futura Medium - CAPS

SUB HEADLINES

Futura Medium - CAPS

Body Copy

Futura Medium

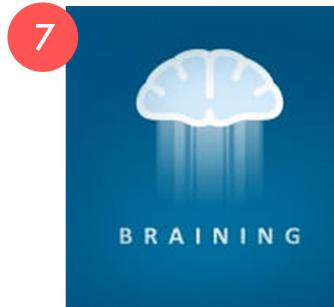
VISUAL DESIGN

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Logo Development • Inspiration



Verbaly



BRAINING



Ovial Pregnancy



epocrates



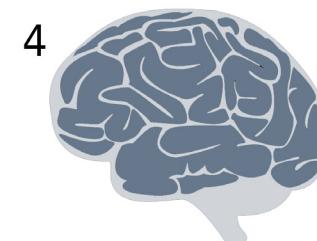
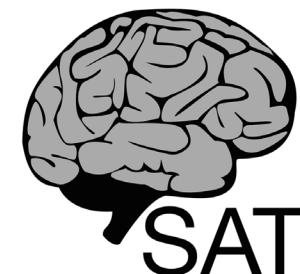
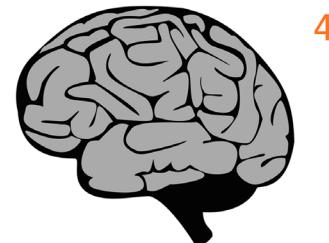
WebMD



VISUAL DESIGN

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Logo Development



VISUAL DESIGN

Logo Development

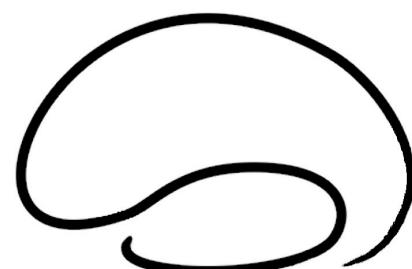
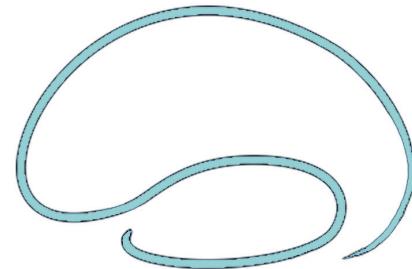
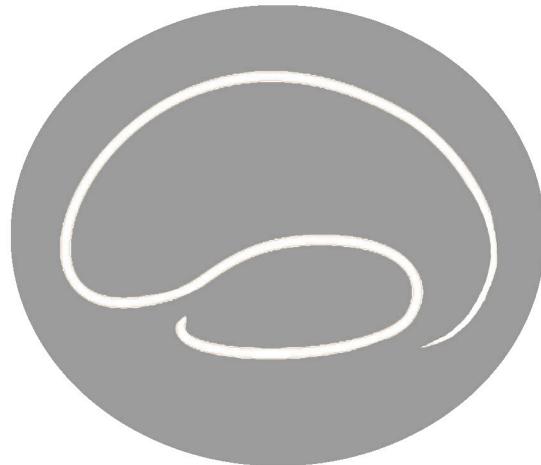
22



VISUAL DESIGN

Final Logo

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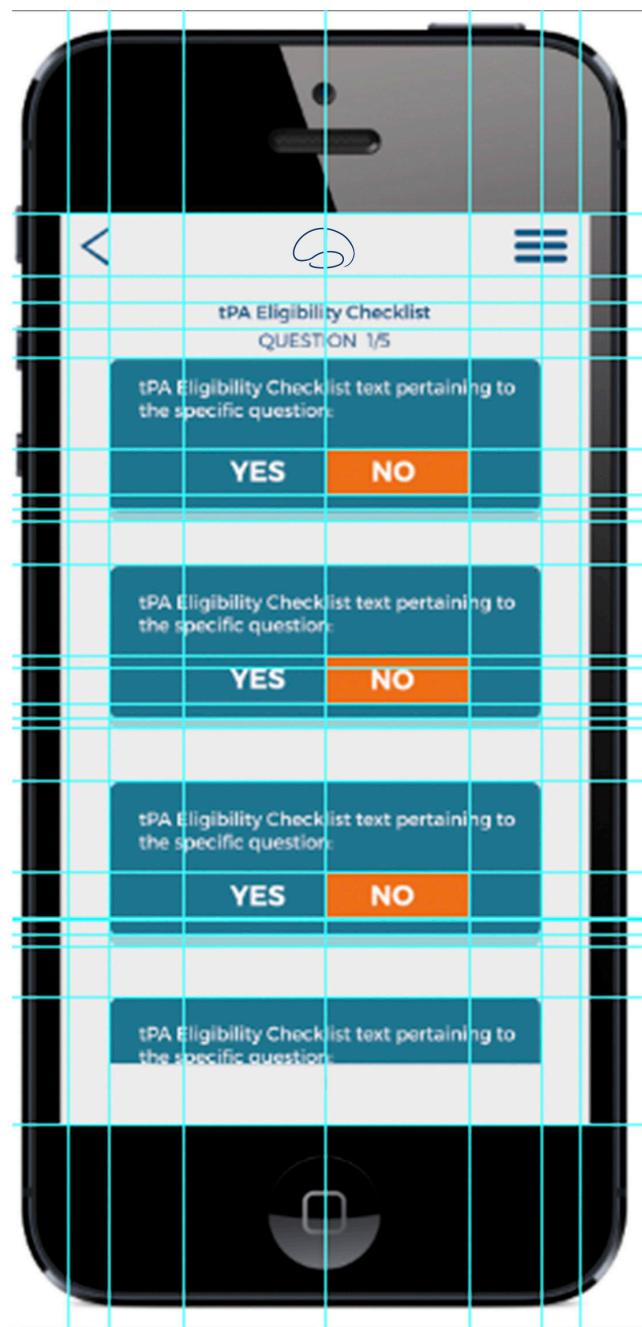


TIME IS BRAIN

VISUAL DESIGN

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Comps



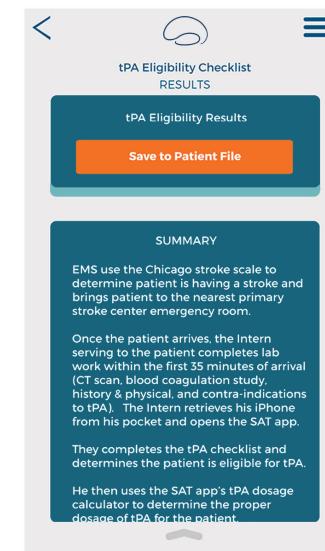
Splash Screen



Main Menu Screen
with icons



tPA Eligibility Checklist



tPA Eligibility Results
Screen

VISUAL DESIGN

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SPASH SCREEN

NAVIGATION MENU

- MONITORING
- CALCULATORS
- TABLES
- CHECKLISTS
- SCALES
- POCKETCARDS

tPA Eligibility Checklist

QUESTION 1/5

tPA Eligibility Checklist text pertaining to the specific question:

YES **NO**

tPA Eligibility Checklist text pertaining to the specific question:

YES **NO**

tPA Eligibility Checklist text pertaining to the specific question:

YES **NO**

tPA Eligibility Checklist text pertaining to the specific question:

YES **NO**

tPA Eligibility Checklist text pertaining to the specific question:

YES **NO**

RESULTS

tPA Eligibility Results

Save to Patient File

SUMMARY

EMS use the Chicago stroke scale to determine patient is having a stroke and brings patient to the nearest primary stroke center emergency room.

Once the patient arrives, the intern serving to the patient completes lab work within the first 35 minutes of arrival (to determine if patient is a candidate for tPA). The intern retrieves his iPhone from his pocket and opens the SAT app. They completes the tPA checklist and determines the patient is eligible for tPA. He then uses the SAT app's tPA dosage calculator to determine the proper dosage of tPA for the patient.

He then completes the SAT app's tPA dosage calculator to determine the proper dosage of tPA for the patient.

Once the patient arrives, the intern serving to the patient completes lab work within the first 35 minutes of arrival (to determine if patient is a candidate for tPA). The intern retrieves his iPhone from his pocket and opens the SAT app. They completes the tPA checklist and determines the patient is eligible for tPA.

They then use the SAT app's tPA dosage calculator to determine the proper dosage of tPA for the patient.

PATIENT RECORDS

Scan the Patient ID in the space below

SCAN

PATIENT RECORDS

Scan the Patient ID in the space below

SCAN

PATIENT RECORDS

Scan the Patient ID in the space below

SCAN

PATIENT RECORDS

Patient ID: 3870 0098 3754 2240

John D
07/30/1979
030M

ADMIT: 03/01/2010
MR# 123-45-67
Acct # 66753099

RESULTS

NIH Stroke Scale	03/01/2010
tPA Checklist	03/01/2010
tPA Dosage	03/01/2010

PATIENT RECORDS

Patient ID: 3870 0098 3754 2240

John D
07/30/1979
030M

ADMIT: 03/01/2010
MR# 123-45-67
Acct # 66753099

RESULTS

NIH Stroke Scale	03/01/2010
tPA Checklist	03/01/2010
tPA Dosage	03/01/2010

Prototype v01 - Findings

App is intuitive

Users were able to easily complete the tasks with minimal pauses.

Lacks simple intermediate screens
Scrolling
user will tap the screen to try to move on

AB testing on Calculator Screen
lb or kg selected FIRST

Menu

Dated design - redesign

Loading Screen
Call to action or delete

Prototype v02 - Findings

More streamlined experience

Loading screen - did not stall the user

Users moved through app with ease

New menu was direct and clear

AB testing on Calculator
Automatic measurement more intuitive

Younger users tended to toggle between lb and kg easily

VISUAL DESIGN

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The visual design section displays ten wireframe prototypes for a mobile application. The prototypes are arranged in two rows of five. The top row includes a home screen, a navigation screen, and three informational/detail screens. The bottom row includes four detailed checklist screens and one main menu screen.

Home Screen:

- Icon: Brain outline.
- Navigation: Back, Cloud, Hamburger menu.
- Content: "Time is Brain" logo.

Navigation Screen:

- Icon: Cloud.
- Navigation: Back, Cloud, Hamburger menu.
- Content: "ABOUT Time is Brain".
- Text: "Time is Brain is a mobile application providing access to medical information for clinicians and the general public." and "Time is Brain also provides continuing education for physicians and health professionals in the area of stroke diagnosis, treatment and care.".
- Text: "Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.".
- Buttons: "CLICK HERE for desktop site" (orange).

Informational/Detail Screens:

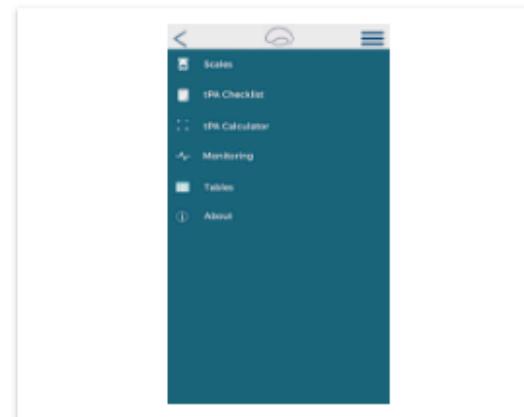
- Monitoring Screen:** Icons: MONITORING, CALCULATORS, TABLES, CHECKLISTS, SCALES, POCKETCARDS.
- Calculator Screen:** Icons: MONITORING, CALCULATORS, TABLES, CHECKLISTS, SCALES, POCKETCARDS.
- Help Screen:** Icons: MONITORING, CALCULATORS, TABLES, CHECKLISTS, SCALES, POCKETCARDS.
- Checklist Screen:** Icons: MONITORING, CALCULATORS, TABLES, CHECKLISTS, SCALES, POCKETCARDS.
- Stroke Scales Screen:** Icons: STROKE SC, SCALES, tPA CHECKLIST, tPA CALCULATOR, MONITORING, ABOUT, NIH Stroke, Cincinnati Stro, Canadian Neurological Scale, European Stroke Scale, Hemispheric Stroke Scale, Matthew Stroke Scale, Functional Assessment, Berg Balance Scale, Modified Rankin Scale, Lawton IADL Scale, Prehospital, Cincinnati Stroke Scale.
- Checklist Screens (x4):** Each shows a list of questions with "YES" and "NO" buttons.
- Calculate Buttons:** Located at the bottom of the checklist screens.

App Survey

Which menu option would be most functional?



Dropdown Menu



Fullscreen Menu

SUBMIT

MENU



The most inclusive Stroke Assessment and Treatment system you will ever need.

Stroke Assessment and Treatment is a unique and easy to use tool for assessing your patient's risk of a stroke, monitoring of stroke, and steps you can take to reduce the risk of stroke.

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FINAL PRESENTATION

Time is Brain
Stroke Assessment and Treatment App