



A WAYFINDING SYSTEM FOR AUBURN MEMORIAL HOSPITAL



Photo from Holt Architects, PC., 7 Oct 2009.

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INTRODUCTION: PURPOSE OF REPORT

The purpose of this report is to recommend ideas for a wayfinding system at the Auburn Memorial Hospital (AMH) located in Auburn, New York, with a focus on the hospital as it changes over time due to new services, facilities or uses. This report is generated to fulfill requirements for the Design and Environmental Analysis Class 4530/6530 at Cornell University for the fall 2009 semester. Recommendations are based on applicable evidence based design research and context of the hospital. No on site visits were conducted. The assignment was given October 7th and was finished October 24, 2009. Holt Architects, PC from Ithaca, New York is the client.

PROJECT: AUBURN MEMORIAL HOSPITAL: wayfinding issues

CLASS CLIENT: HOLT ARCHITECTS, PC from Ithaca, New York

CONSULTANT: EVELYN VARNEY

FOCUS: WAYFINDING SYSTEM, changes over time

INTRODUCTION: UNDERSTANDING NEEDS



Auburn Memorial Hospital (AMH) is a small, rural hospital in upstate New York located in the city of Auburn, Cayuga County, New York. Population of Auburn in 2000 was 28,574 with an estimated 2008 population of 27,138.

(NY Home Town Locator)

Mission of AMH: to provide compassionate, quality care:

- emphasizing patient-centered care
- continuously improving delivery and quality of care
- enhancing the health status of the community
- optimally applying physical, financial, and human resources, creating necessary alliances and partnerships

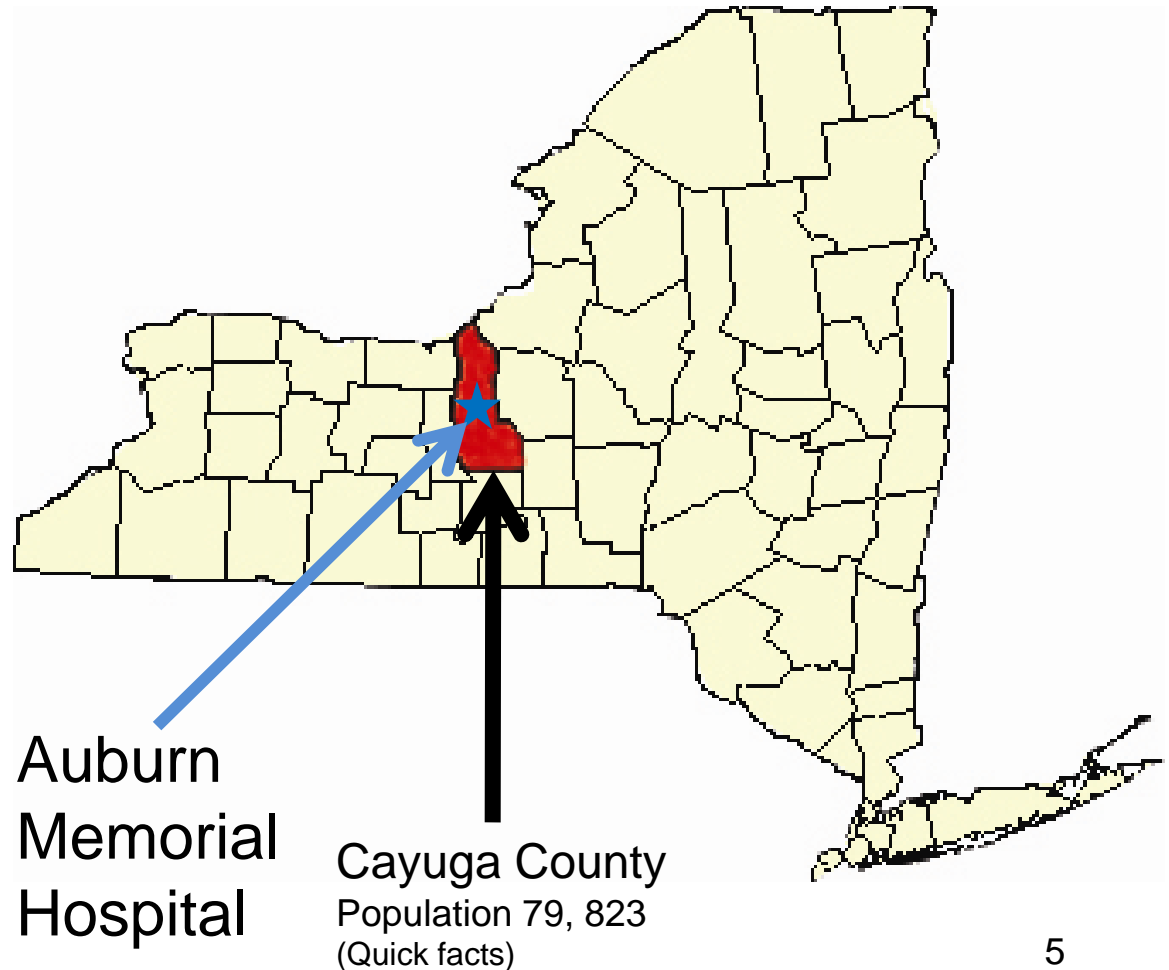
(Auburn Memorial Hospital, mission)

People are important to the hospital's mission and need an efficient way to navigate in the hospital's facilities.

INTRODUCTION: AREA DEMOGRAPHICS

- Cayuga County \$ 45,105 median household income in 2007
- 94% white majority of population in 2008
- 15% are over 65 years of age in 2008
- 25% are under the age of 18 in 2008
- 72% own home in 2000
- 13% below poverty in 2007

All facts from Quick Facts website.



INTRODUCTION: HOSPITAL CONTEXT

Auburn Memorial Hospital (AMH) competes for clients with 4 other hospitals within a 20 mile radius of Auburn, New York.

- Crouse Hospital, Syracuse
- SUNY Upstate Medical Center, Syracuse
- Cortland Memorial Hospital, Cortland
- Cayuga Medical Center, Ithaca



INTRODUCTION: HOSPITAL CONTEXT



AUBURN MEMORIAL HOSPITAL

background

- small, rural, 99 bed community hospital*
- bankruptcy filed in 2007*
- low to moderate income population (Quick facts)
- review by Wellspring restructured core operations*
- difficulty recruiting new doctors and nurses*

new leadership

- mission to change image in community*
- new CEO provides forward thinking leadership*
- fierce competition within 20 mile radius from larger hospitals

2007 - 2008 upgrades

- four new operating rooms completed*
- private one room patient rooms offered*
- major upgrades to radiology department*
- bariatric surgery offered in new department*

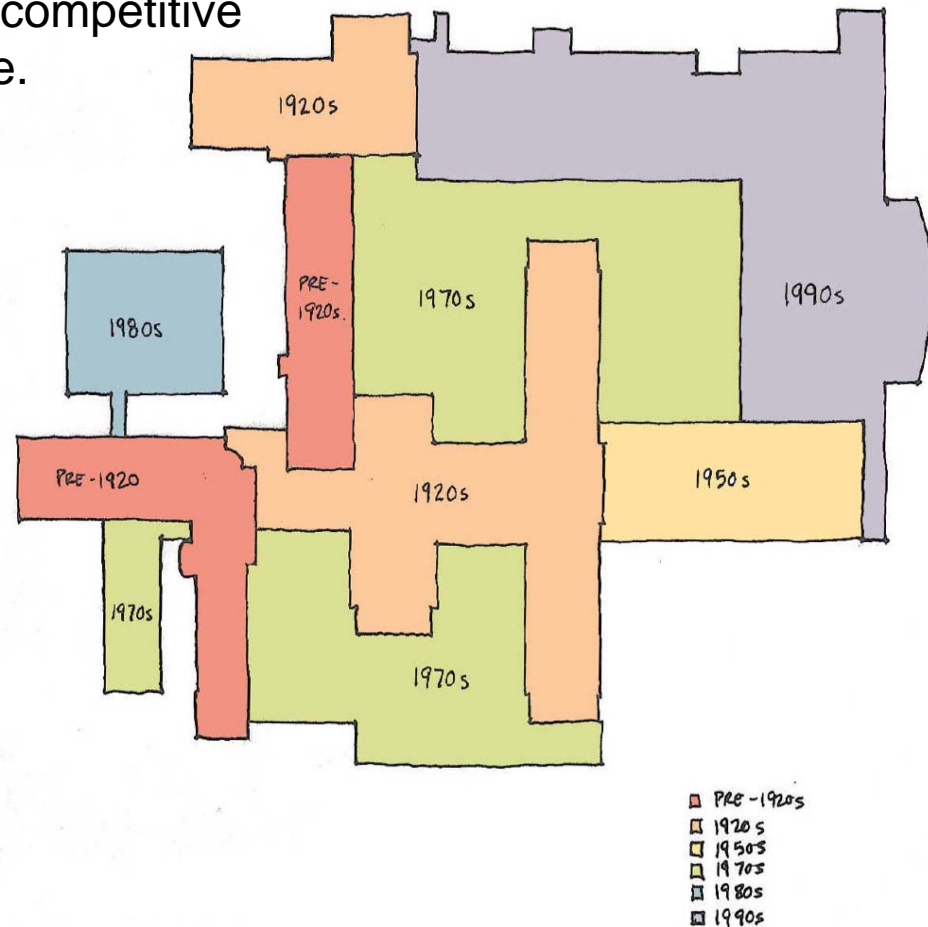
With 686 employees, AMH served 4,700 patients and 148,000 outpatients in 2007.
(Miller, 2008)

*M.D. News, 2009.

INTRODUCTION: HOSPITAL CONTEXT

Changes in the way healthcare is delivered, innovations in financing and the need to update old, out of date hospitals will increase hospital construction annually for the next eight years. Construction spending on hospitals and nursing homes will grow from \$21.2 billion (2002) to **\$33.1 billion in 2010.** (Babwin, 2002.)

Auburn Memorial Hospital Site Plan shows building additions over the years. Renovations and upgrades are needed to stay current and competitive for the future.

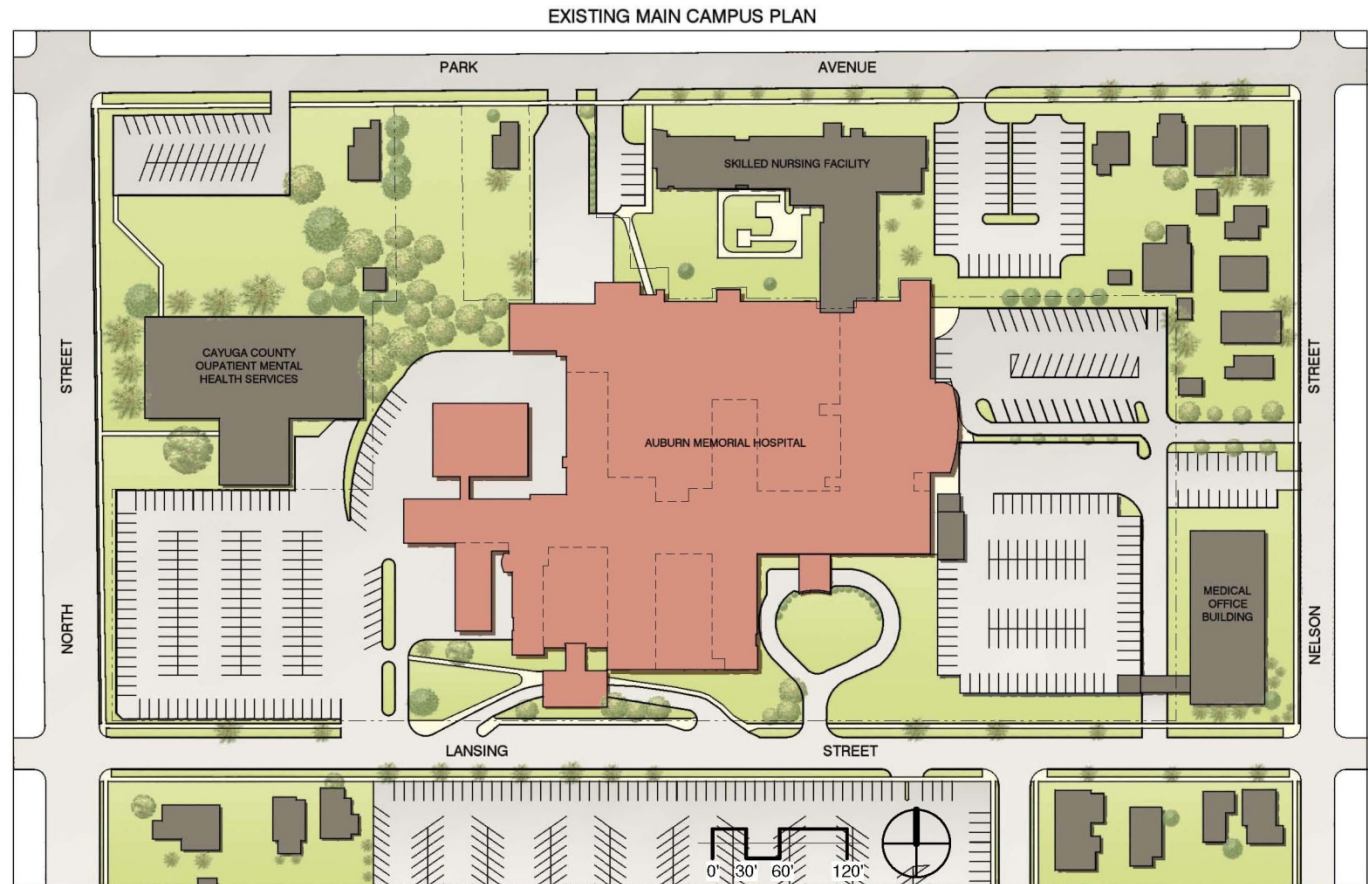


INTRODUCTION: HOSPITAL CONTEXT

What happens when new additions are added or the obstetrical unit is changed to another floor level?

How do users find their way?

How will new construction or renovation impact wayfinding strategies over time?



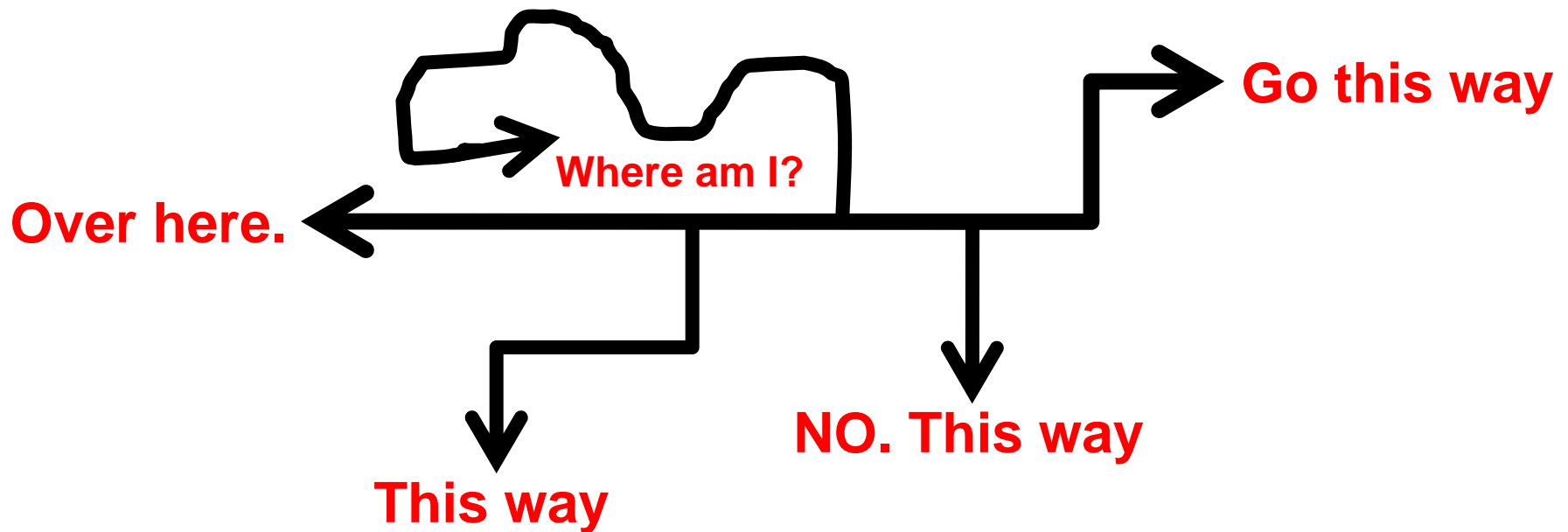
AMH Building site plan, Holt Architects, PC., 2009.

WAYFINDING: WHAT IS IT ?

WAYFINDING: WHAT IS IT?

the process of using spatial and environmental information to find our way in the built environment

(Brandon, Kelly)



WAYFINDING: WHAT IS IT ?

WAYFINDING refers to behavior:

- What do people see?
- What do people think about?
- What do they notice?
- What do they do to find their way from one place to another?

(Carpman & Grant, 1997, p 275)



www.urbanplacesandspaces.blogspot.com/2008



www.superstock.com/..1612R-28150



www.fhs.usyd.edu.au/.../index.shtml

WAYFINDING: WHAT IS IT ?

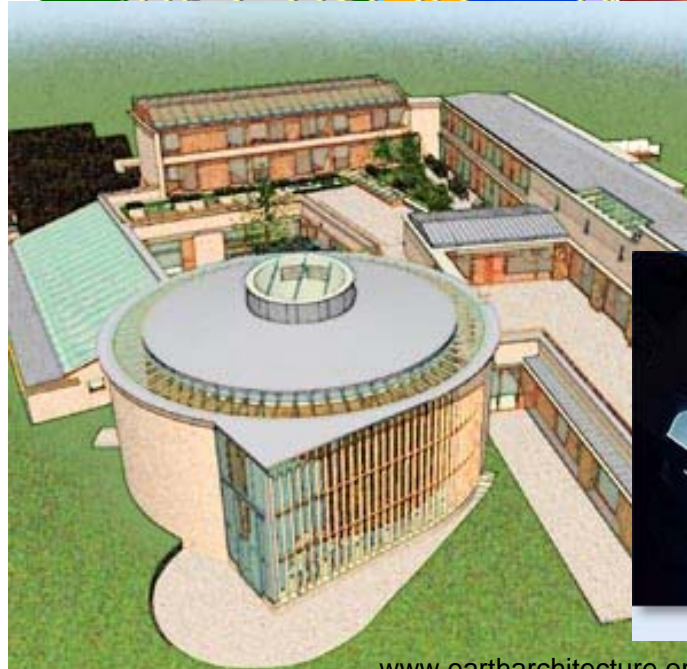
... it's not just about the signs,

According to
Carpman & Grant,
1993 (as cited in
Ulrich, et al. 2008,
p 92)

... it's about the
integration of all
visual clues into a
system to find one's
way :

- maps
- electronic information
- signage
- verbal directions
- building design

www.downtownsanantonio.org_images/wayfindingMap.jpg



www.newwestend.com/generic/image/image/default/30



www.voiceandspeech.com

www.eartharchitecture.org



www.l-aadvertising.com/images/lv_hiosh.jpg

WAYFINDING: WHAT IS IT ?

Ulrich et al.(2008, pp 92-3) defines a **WELL INTEGRATED WAYFINDING SYSTEM** as:

1

ADMINISTRATIVE AND PROCEDURAL INFORMATION

mail out map, web information, verbal directions

2

EXTERNAL BUILDING CLUES

signs leading to hospital buildings and parking areas

3

LOCAL INFORMATION

information desks, you-are-here maps, directories, signage, electronic kiosks

4

GLOBAL STRUCTURE

building layout and design

WAYFINDING: WHAT IS IT ?

It's a management system.

- "... instead of the engineering department handling signs, information technology handling information disseminated at kiosks and on the Web, and marketing turning out brochures and on-site user guides and maps, **one organizing group manages** a complete and consistent wayfinding system."

(Cooper, 2009 p 25)

- a management approach to wayfinding incorporates all employees, including help desk personnel and interpreters (Cooper, 2009 p 25)

- wayfinding design requires a team approach

(Cooper, 2004, p 24)

The Cleveland Clinic created a master wayfinding plan that will accommodate its growth for the next 25 years
(Ridenour, 2000, p 43)

WAYFINDING: WHY CARE ABOUT IT ?

WHY CARE ABOUT WAYFINDING IN A HOSPITAL?

- **People** under *the most stress* in our society, the sick, the elderly, people who physically can't walk long distances and family members worried about loved ones must navigate large, complex healthcare facilities putting patients and family members under more stress.

(Carpman & Grant, 1997, p 276)

- Part of AMH's mission is to enhance the health status of the community by improving delivery and quality of care. Improved wayfinding will improve quality of care.

Cities should be designed for the first time visitor since repeat visitors can use their past experiences for navigation. (Lynch, 1960).

The same could be said for hospitals.

WAYFINDING: WHY CARE ABOUT IT ?

WHY CARE ABOUT WAYFINDING IN A HOSPITAL?



Louisville, KY Medical Office Building at
[Http://www.innovest.com/pages/news](http://www.innovest.com/pages/news)

- **High costs** are associated with changes in signage or wayfinding modalities. In 2002 the Louisville Medical Center Inc. (LMC) spent \$800,000 on new signage and \$100,000 on logo development, two prototype signs, various medical center issue studies and maps to be used in mailers (Gordon, 2002).
- The Auburn Memorial Hospital is not as large as the LMC, but will still incur costs for wayfinding.

WAYFINDING: WHY CARE ABOUT IT ?



WHY CARE ABOUT WAYFINDING IN A HOSPITAL?

- People naturally ask someone for directions when they aren't sure where to go, especially when they are in a hurry to get to an appointment on time. These minutes translate into **lost staff time** for doctors, nurses and other supportive staff other than dedicated wayfinding staff. In a study conducted in 1990 by Craig Zimring at Emory Hospital (as cited by Ulrich, et. al 2008, p 92) 4500 staff hours were used each year to give directions in a 604 bed hospital that were not dedicated to the information staff.
- AMH is a smaller hospital, but would still suffer lost staff time due to poor wayfinding design.

WAYFINDING: HOW CAN IT HELP ?

HOW CAN IT HELP?

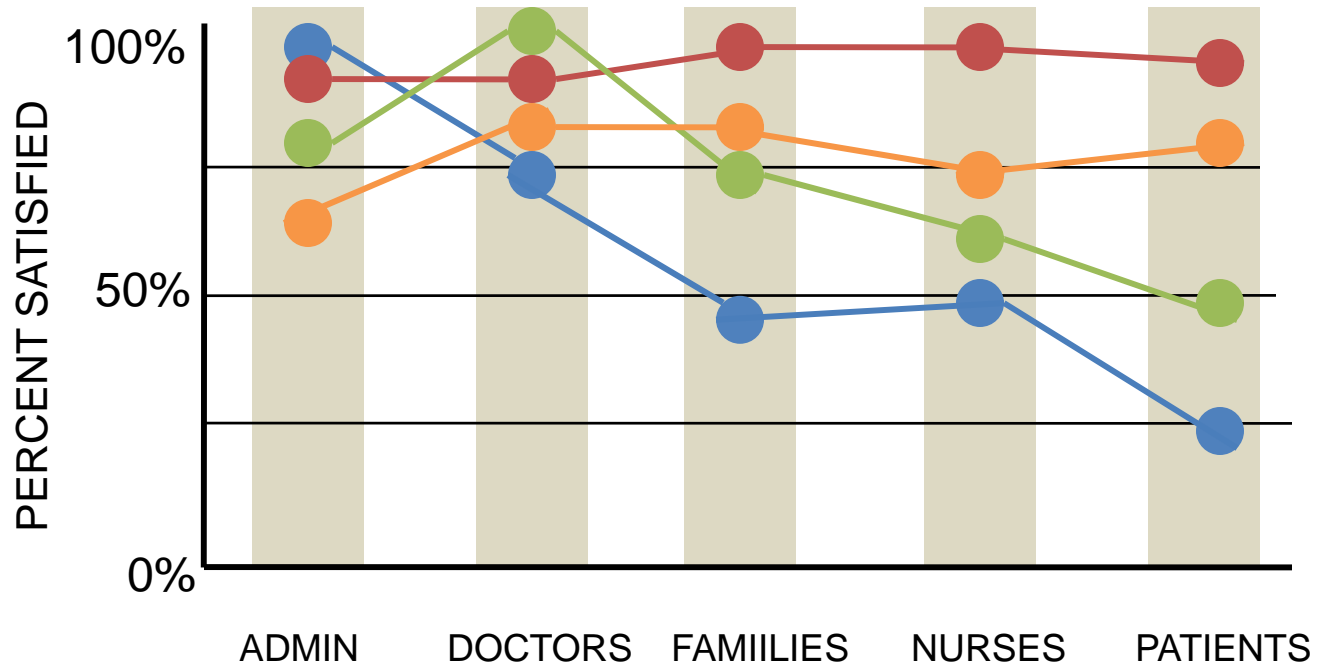
- 1- Lessens frustration and stress for users (Payette 2000, p195) ----- supports AMH's mission
- 2- Reduces costs for administrators if have effective wayfinding system in place as found in 1990 study done by Zimring (as cited in Ulrich, et al. 2008, p 92)
- 3- Creates a positive experience for patients and families through emotional memories that generate positive emotions (Philippe, 2009)
- 4- Convey an impression of high quality care (Cooper, 2004)

Good architecture in the healthcare setting must meet the needs of all those who use such facilities in times of uncertainty, stress and dependency. (Kobus, 2000)

WAYFINDING: HOW CAN IT HELP ?

HOW CAN IT HELP?

- Lower costs
- Less stress for patients
- Less stress for doctors
- Satisfaction with overall way-finding system



Hypothetical graph of different stakeholders shows believable factors for wayfinding

- administration more concerned with costs than overall wayfinding system
- patients more concerned with less stress than anything else
- families less concerned with lowering costs than less stress for patient
- each stakeholder places values differently

RECOMMENDATIONS: WAYFINDING SYSTEM



Buildings should be designed to accommodate infrequent visitors as well as regular building users, and people with sensory limitations, an especially vulnerable group. (Wayfinding design process, 2009)

Hiring an outside wayfinding management company is the best approach for an effective wayfinding system.

(Carpman 1997, p 288-9)

Due to AMH's recent bankruptcy, an in-house approach may be more economical right now.

A team approach including administration, facilities personnel, board of trustee members, marketing, nurses, doctors, patients, families of patients, security personnel, volunteers, gift shop workers and other diverse personnel would provide diverse perspectives for a **working wayfinding committee** (Cooper & Smith 2004, p 25).

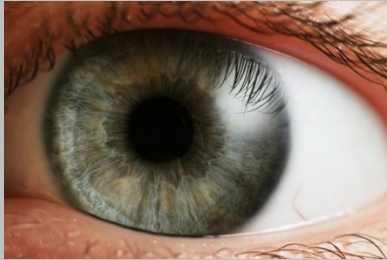
RECOMMENDATIONS: WAYFINDING SYSTEM

A better hospital
“ . . . provides a
physical
environment that
is welcoming to
patients,
measurably
improves their
quality of life,
and supports
families and
employees . . . ”
(Sadler, 2006)



Text from Cooper & Smith 2004.

RECOMMENDATIONS: WAYFINDING SYSTEM



www.en.wikipedia.org/eve



www.geeologie.com/2009/02



www.askadri.com/?tag=smell

- Research studies for wayfinding strategies involving young men and women between 18 to 26 years of age found that even in this small focused age group, different wayfinding strategies were used to find their way in a new area (Chen, 2009) (Kato, 2003) (Lawton, 2002).
- Based on this assumption, a broader slice of the population, including the elderly, physically challenged, the infirm, and the young would benefit from a variety of approaches for wayfinding.
- A good wayfinding system would include a **variety of navigation approaches** using all the senses: sight, touch, smell and sound.

RECOMMENDATIONS: SPECIFIC ELEMENTS



Using the outline from Ulrich, et al., 2008, pp 92-93, a well integrated wayfinding system incorporates **administration and procedural information, external building clues, local information and global structure.**

Specific recommendations for each component will be listed and explained in the following pages for implementation at Auburn Memorial Hospital. Some components overlap. Further, a sequence of recommendations categorized from low to high costs will quantify these components with projected timelines.

administration
& procedural

+

external
building
clues

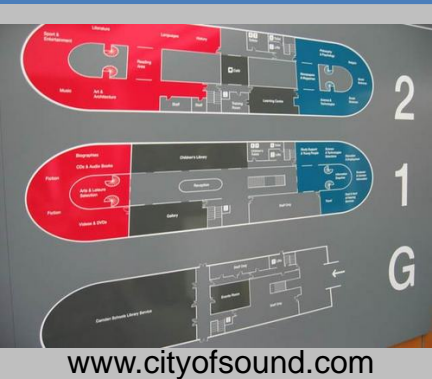
+

local
information

+

global
structure

RECOMMENDATIONS: SPECIFIC ELEMENTS



administration
& procedural

Currently, **less than half of all hospitals** provide basic user guides and maps to aid in wayfinding (Cooper & Berger, 2009).

Mailing out maps and directions to first time users of the hospital will help to alleviate stress for the patient and be part of the overall wayfinding strategy.

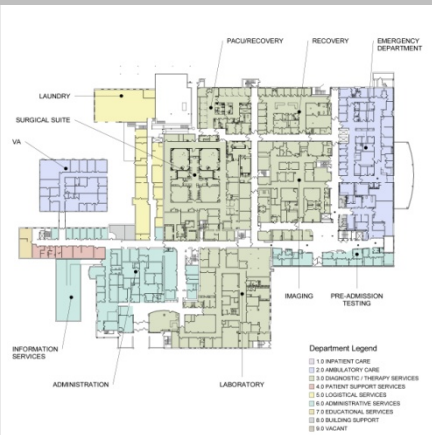
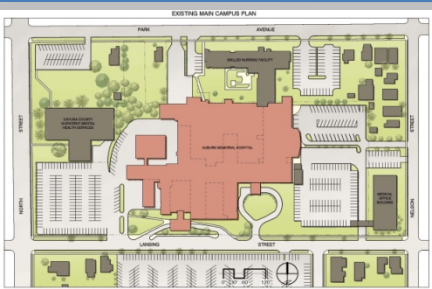
- Mungo Smith, an architect with Maap Architects, was frustrated because a client did not use their suggestion to send out maps when appointments were made. Hospitals in the Netherlands and Scandinavia send out personalized maps by drawing the route on it for their patients. (Signs: curing the hospital, 2007). Users can then take the map with them on their appointment day and use it to navigate the buildings.

RECOMMENDATIONS: SPECIFIC ELEMENTS

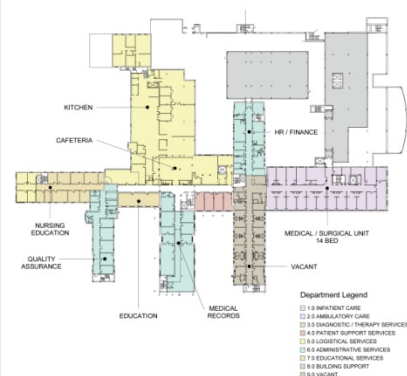
administration
& procedural

Website information for AMH should include clear readable maps with directions to the hospital entrances and label available parking (Cooper & Berber, 2009, p 27). Printable maps with easily understood directions should also be accessible from the patient's home computer.

- Directions on the website and printable maps should use left-right terminology rather than cardinal terminology (north, south, east, west) for more effective navigation (Hund, 2009, p 158).



All images from Holt Architects, PC.



RECOMMENDATIONS: SPECIFIC ELEMENTS



administration & procedural

Once arriving at the hospital, an **information desk** should be located within direct lines of sight from the main entrances (Carpman & Grant, 1997, p 290).

- **Verbal directions** from staff or a volunteer manning the information desk will re-affirm the patient's navigation route. **Staff training** for using consistent terminology and how to give simple clear directions should be provided for information desk personnel/volunteers as well as the entire hospital staff. (Cooper & Smith, 2004, p 28).

RECOMMENDATIONS: SPECIFIC ELEMENTS

external building clues

- Urgent care center in Fenton, MO increased walk-in business 40% just by installing an **illuminated sign** from dawn to dusk on the front of the building (Anonymous, 2008). Other applications could be explored.



Edgewater Casino in Vancouver at <http://www.building.ca/.../27048>

RECOMMENDATIONS: SPECIFIC ELEMENTS



www.sos.state.il.us/publications/rules

external
building
clues

- Signage starts on the freeway and not when you turn into the hospital driveway.
- Aurora Health Care in Milwaukee used a **signage managing company** to make signs when needed off site and then deliver them when they were needed (Anonymous, 2007). This may or may not be a feasible alternative for AMH due to costs.

RECOMMENDATIONS: SPECIFIC ELEMENTS



local
information

- Touch screens in **kiosk units** with print out directions and a map (Cooper, 2009, p 26-7) could provide convenient navigational maps for hospital users.
- Kiosks can cost up to \$100,000 each (Bucciarelli, 2004), which may not be in the budget this year for AMH, but could be included at a future time if agreed the units would reduce stress and staff time devoted to giving directions.

RECOMMENDATIONS: SPECIFIC ELEMENTS

local
information



www.hfmmagazine.com

Holy Name Hospital in Teaneck, NJ named their 20 elevators after trees and plants and used **large floor icons** like this oak with acorns and leaves on the flooring to landmark the areas (Thrall, 2004). This idea could be applied to AMH by using different colors and symbols denoting each of the four floors.

RECOMMENDATIONS: SPECIFIC ELEMENTS

local
information

Signs with reusable holders and slide in cardstock (Cooper, 2009, p 27) would enable local facility departments to update signage and room numbers, but facilities should be trained on how to update cardstock inserts for consistency in the hospital (Cooper & Smith, 2004, p 28).



“...signs should reinforce pathways, not be the only guide” (Thrall, 2004)

RECOMMENDATIONS: SPECIFIC ELEMENTS

local
information

Coordinate interior architecture tools of color, flooring, lighting, and artwork with signage to create unique looking places within the hospital. These can be used as landmarks and/or as destinations for direction giving. (Carpman & Grant, 1997, p 290).

Evelina's Children's Hospital in London used color coding and symbols such as beach, mountain, and savannah effectively to indicate different areas of the hospital and were carried over to signage. (Signs, curing the hospital, p 16)



RECOMMENDATIONS: SPECIFIC ELEMENTS



www.symbianstar.com/images

local information

- Provide **view to the outdoors** for orientation of users in the hospital (Carr, 2009) and to lower stress. If not, use photo murals or paint landscape views on walls inside by asking local artists to donate their time and talent. Try one wall first, see what kind of response is generated. If successful, then try others. Look online for local mural artists.
- Anger and stress were reduced when nature paintings were used on walls in office settings, which is applicable to AMH.(Kweon, et al., 2008).

RECOMMENDATIONS: SPECIFIC ELEMENTS

local
information
& global
structure

Use **common language on signs**
and not Latin names (Arthur & Passini,
1992, 151) It's too hard to understand.

Otorhinolaryngology
Diagnostic Imagery
Cardiology

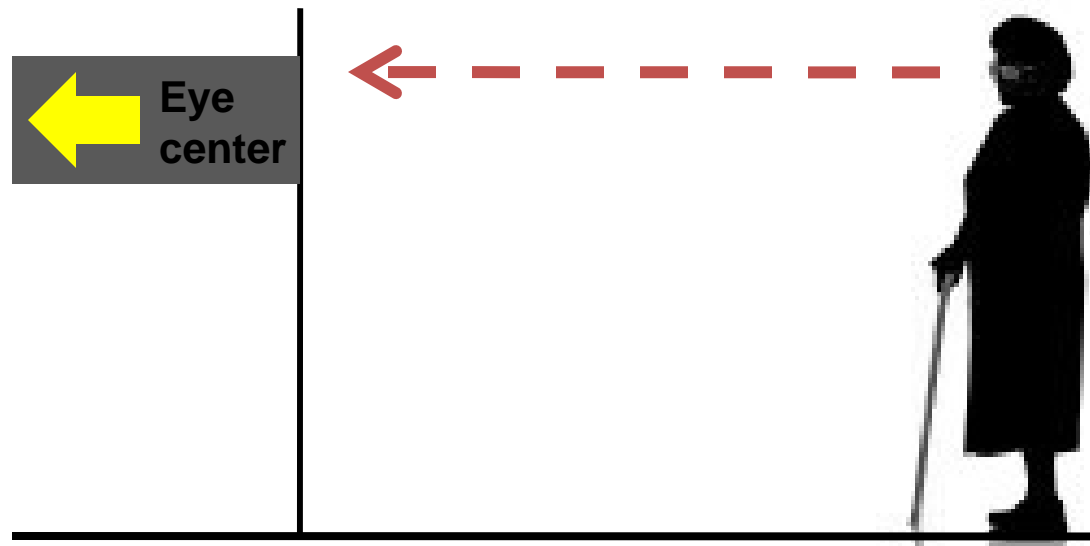


Ear, nose and throat
Radiology
Heart Center

RECOMMENDATIONS: SPECIFIC ELEMENTS

local
information
& global
structure

Place signs at **eye level** on the wall
(Arthur & Passini, 1992, 178)



RECOMMENDATIONS: SPECIFIC ELEMENTS

local
information
& global
structure

Consider placing room numbering signs **perpendicular to the wall** instead of on the wall for instant recognition.



Fellowship Nursery at www.signs1st.com/wayfinding

RECOMMENDATIONS: SPECIFIC ELEMENTS

local
information
& global
structure

A light colored sign on a white wall is more difficult to spot than a dark sign on the same wall (Arthur & Passini, 1992, 168).

Use **good design sense** when designing and placing signage.

Can
you
read
this?

Can
you
read
this?

Can
you
read
this?

Can
you
read
this?

RECOMMENDATIONS: SPECIFIC ELEMENTS

local
information
& global
structure

- The classic letterform of Helvetica yields 50 feet per 1 inch of cap letter height.
(Arthur & Passini 1992, p165)
- For a length of 200 feet, the letters would need to be 4 inches in height for readability. **Letter size** may need to be increased due to user type.

Text at 1
inch high



50 feet



RECOMMENDATIONS: SPECIFIC ELEMENTS

local
information
& global
structure

Use proper grouping of words on signs for legibility. Flush left and grouped is preferred (Arthur & Passini 1992, 181).

This is
flush left
and
grouped.

This is
flush left
and
grouped.

This is
flush
right and
not
grouped.

This is
flush
right and
not
grouped.

This is
flush
centered
and not
grouped.

This is
flush
centered
and not
grouped.

RECOMMENDATIONS: SPECIFIC ELEMENTS

local
information
& global
structure

Signage is the written communication tool **most often relied upon** to help visitors, patients and even staff to navigate their way through a health care facility. (Cooper & Smith, 2004)

Give hallways **street names** to differentiate them and use names in directions for users (Thrall, 2004). Instead of administration assigning names to the hallways, devise an interactive approach to the project, ie. create contest for users to submit ideas for names. Vote on winner. Make it a community affair.

MAIN EAR, NOSE & THROAT STREET



CHILDRENS ROAD



RECOMMENDATIONS: SPECIFIC ELEMENTS



local
information
& global
structure

Handheld directional devices and smart camera phones for the visually impaired are being explored for hospital use (Cooper & Berber, 2009). Costs need to be weighed against use and efficiency for AMH before purchases are initiated.

RECOMMENDATIONS: SPECIFIC ELEMENTS



Pediatric Oncology unit at Upstate Medical Center, Syracuse, New York. Taken by author.

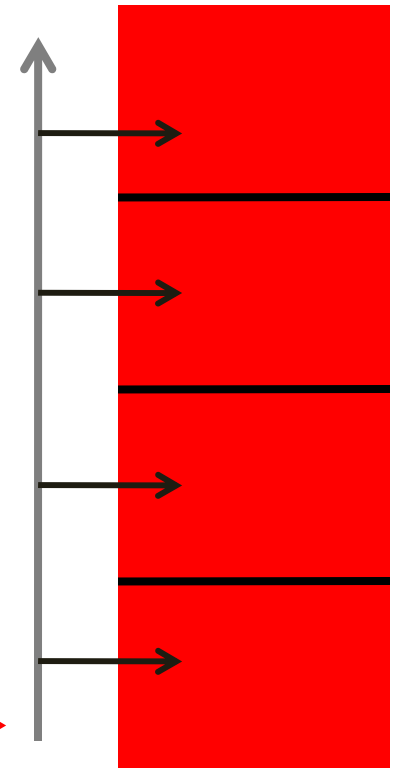
local information & global structure

- Hospitals are like cities, each has similar navigation elements like paths, edges, districts, nodes and landmarks. A **landmark** as defined by Lynch (1960, 48) is a point reference system of frequently used clues of identity for navigation.
- Floors, hallways or elevators identified with particular colors and symbols are landmarks in a hospital as well as fountains, water walls, or gardens.
- Landmarking elements could be utilized at AMH under a strategic wayfinding master plan for a better navigational experience for the user.

RECOMMENDATIONS: SPECIFIC ELEMENTS

global
structure

- The strategy of **moving horizontally** in a building before moving vertically is more effective as found by Holscher, et al.(2009).
- Currently, at AMH, users must move through halls to gain access to the elevators. In future building additions, care in placing elevators for better navigation should be considered in terms of horizontal and vertical movement.



RECOMMENDATIONS: SPECIFIC ELEMENTS

global
structure

Make **main entrances** and other major entrances architecturally obvious so the user can find it easily (Carpman & Grant, 1997, p 289).



RECOMMENDATIONS: TIMELINE AND COST



Putting together a strategic wayfinding system for Auburn Memorial Hospital is complex and costly. There are many ideas to choose and implement, yet each must be coordinated for a total finished approach to work effectively. Color, interior finishes, symbols, lighting, landmarks, maps and directories all work together to create a good wayfinding system (Ridenour, 2000), including known expected renovations and building additions.

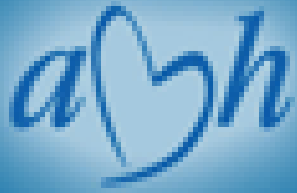
Listed are timeline recommendations projected into the future **IF** a wayfinding management signage company is **not hired**.

RECOMMENDATIONS: TIMELINE AND COST



ITEM	TIMELINE	COST
1- Create user friendly map and directions for patients	Immediate	Do in-house or ask high school design or college student to do
2- Mail out map and directions to new patients making appointments at hospital	immediate	Postage and staff time to assemble
3- Update website to include buttons for "MAP" and "DIRECTIONS" for entrance access and parking	Immediate	Do in-house or ask college student majoring in computer science to do, give small stipend
4- Man information desk in lobby from 9am to 5pm Monday through Friday with volunteers	immediate	Staff hours to procure volunteers
5- staff training for all employees & volunteers on how to give clear directions and use consistent terminology	immediate	Lost staff hours while in training

RECOMMENDATIONS: TIMELINE AND COST



ITEM	TIMELINE	COST
1-Put illuminated sign on major entrances	Within next year 2010	Very high, try to cover costs with grant
2- Design, make reusable placeholders with slip in cardstock, coordinate with other landmarks, train facilities to update	Within next year 2010	Do in-house or ask high school design student as volunteer, buy a quality printer so cardstock can be printed in-house
3- create view to outdoors	Within next year 2010	Minimal if ask local artist as volunteer
4- place signs at eye level	Within next year 2010	In- house facility hours
5- check letter size of signs and placement in hospital– are they readable?	Within next year 2010	Staff hours to walk around, look and document; change where needed
6- re-do signs that are not grouped well so readability improves	Within next year 2010	Staff hours to locate signs, remove and re-do

RECOMMENDATIONS: TIMELINE AND COST

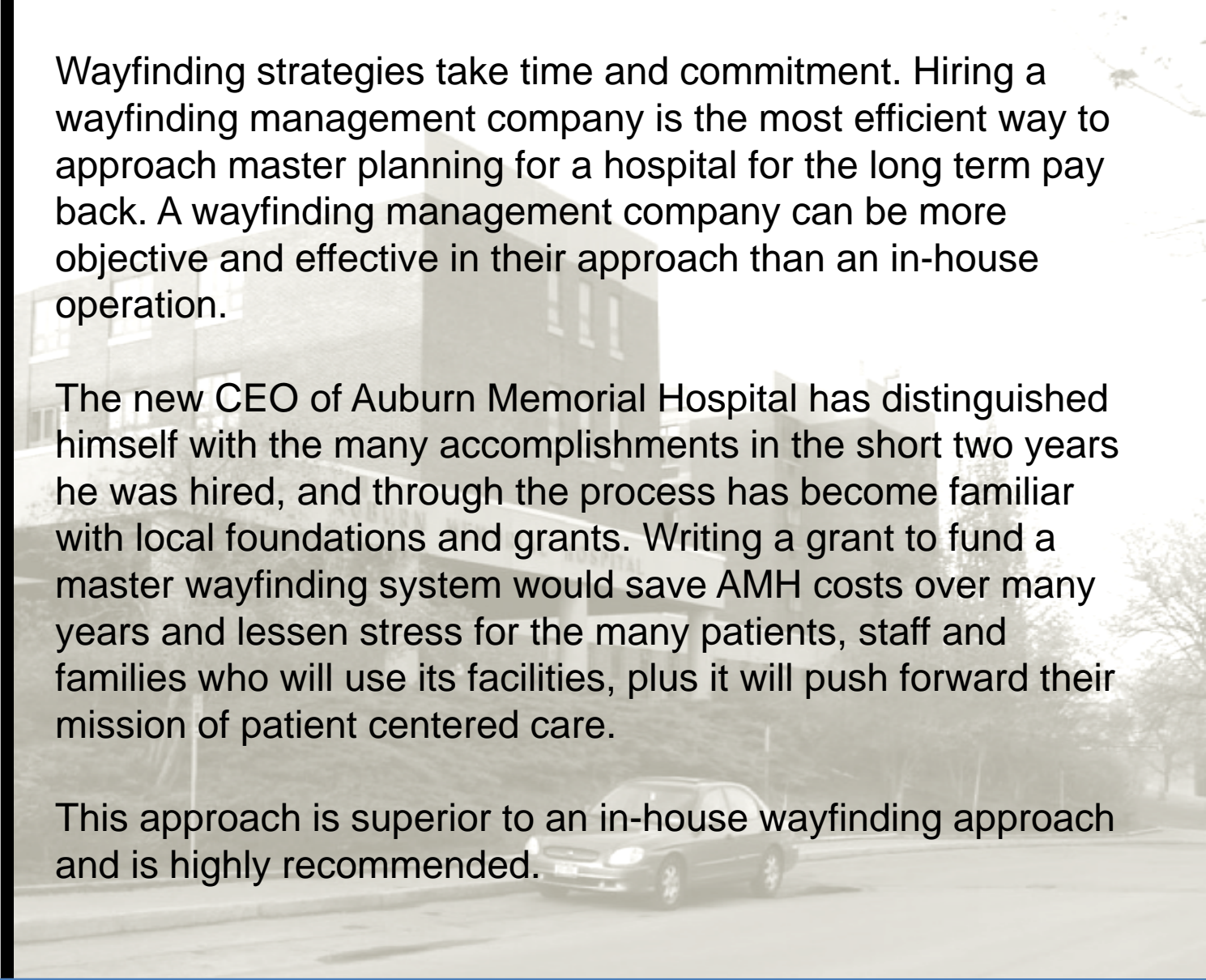


ITEM	TIMELINE	COST
1- hire wayfinding management company to design system for hospital	Next 5 years	Grant money
2- install kiosk units	Next 5 years	Grant money
3- coordinate all elements for implementation of new wayfinding system	Next 5 years	Included in wayfinding management company contract, staff hours to participate
4- use common language for signage	Next 5 years	Included in wayfinding management company contract
5- Use street names for hallways, include on paper and web directions	Next 5 years	Included in wayfinding management company contract

RECOMMENDATIONS: TIMELINE AND COST



ITEM	TIMELINE	COST
1- install large flooring icons to match other symbols on floors	When renovation happens	In-house facilities under direction of architect
2- make entrances architecturally obvious on approach	When renovation happens	Varies with complexity
3- purchase handheld devices or camera phones for visually impaired users	Beyond 5 years, or never depending on future research outlooks	Costly, could write grant to cover expenses

The background of the slide features a faded, grayscale image of a large, multi-story brick building, likely a hospital, with several windows. In the foreground, a dark-colored sedan is parked on a paved area. The overall image is semi-transparent, allowing the text to be clearly visible.

Wayfinding strategies take time and commitment. Hiring a wayfinding management company is the most efficient way to approach master planning for a hospital for the long term pay back. A wayfinding management company can be more objective and effective in their approach than an in-house operation.

The new CEO of Auburn Memorial Hospital has distinguished himself with the many accomplishments in the short two years he was hired, and through the process has become familiar with local foundations and grants. Writing a grant to fund a master wayfinding system would save AMH costs over many years and lessen stress for the many patients, staff and families who will use its facilities, plus it will push forward their mission of patient centered care.

This approach is superior to an in-house wayfinding approach and is highly recommended.

CONCLUSION

- Anonymous. (2007). Healthcare system make new signage an easy process. *Health Facilities Management*. (20), 12, 11. Retrieved October 14, 2009 from <http://hfm magazine.com>
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