

Cayuga Medical Center, Radiation Medicine

The Social Ecology of the Small Patient-Care Team: Communication Patterns, Proximity, Teamwork, and Design

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Introduction

This report discusses the nature of doctor-nurse communication patterns in the small-team setting. By understanding this issue thoroughly first, it is believed salient design concepts will be better understood.

The report:

- **explores** the significance of communication within the health care setting, including relevant research conducted both inside and outside of the health care setting.
- **reports and analyzes** detailed doctor-nurse communication pattern observational data collected in CMC's Radiation Medicine Unit, along with a more conceptual communication-centered **layout and adjacency analysis**.
- **synthesizes** research and observational data to develop inferences and conclusions about the effectiveness of the current CMC Radiation Medicine design as it relates to communication.
- **invents** a new design layout based on these conclusions.

EXPLORE
ANALYZE
SYNTHESIZE
INVENT



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Why Care About Communication in Health Care?

- Poor communication causes 70% of medical errors.

- Failures are common.



Better Communication = Better Care

- In a 2004 report for *Quality and Safety in Health Care* (Leonard, Graham, and Bonacum 2004), researchers report that the base cause of 70% of medical errors is poor communication. In 75% of these cases, the patients died.
- Another 2004 study (Lingard et al) analyzing communication patterns in an operating room found that thirty percent of all communications between team members were classifiable “communication failures,” and that many such errors led to unnecessary error and expense.



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Three Central Communication Issues

Three main factors influencing communication will be discussed here. They are:

**THREE MAIN
ISSUES:
HIERARCHY
PROXIMITY
BACKSTAGE/
ONSTAGE**

- Hierarchy
 - How does relative power and prestige affect health-care communication? What are the best ways to deal with the inherently hierarchical nature of the health-care setting?
- Proximity
 - How important are adjacencies and visual proximities to effective communication?
- Backstage/Onstage Communication
 - Where is communication taking place? Is it possible to communicate informally in these locations?



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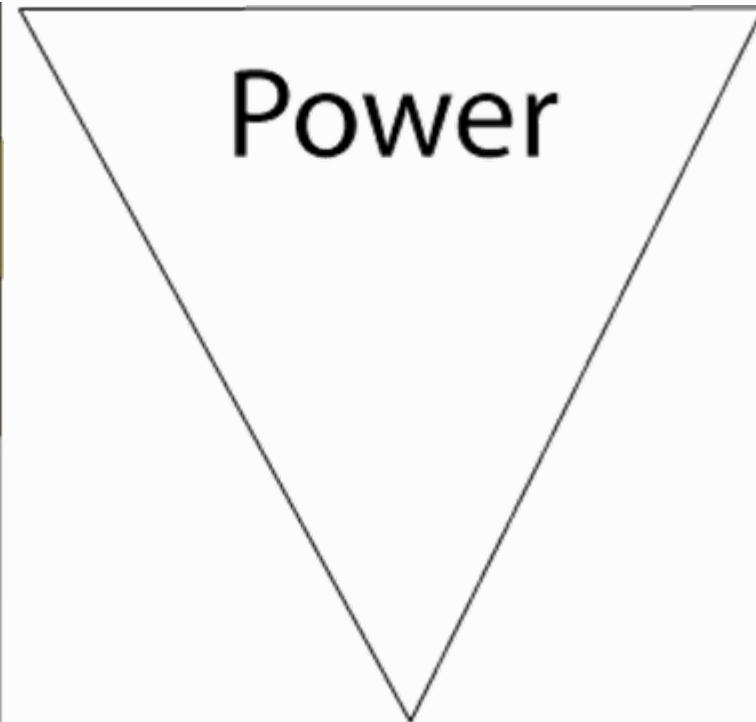
Hierarchy

- Who are the players in the health-care context, and how do they relate to one another?
- How does this power structure affect staff communication?



Hierarchy, Communication, and Health Care

Basic Medical Power Structure (Care Team Members Only)



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Hierarchy, Communication, and Health Care

- As a result of this well-defined and rigidly vertical power structure, many members of the care team are made to feel **intimidated** and **incompetent** by their superiors. This state leads to many of the poor communication outcomes previously mentioned.
- Many health care administrators have noted the similarity between this situation and the now improving situation of the aviation industry, in which co-pilots and other members of the aviation team were once too intimidated and marginalized to criticize the pilot when a human error was noted (Grogan et al. 2004). Research indicates that Crew Resource Management Training, effective in the aviation setting at reducing hierarchy, has also been helpful in mitigating communication problems in the health care setting.



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Hierarchy, Communication, and Health Care

Assertiveness is crucial to effective communication.

- A 2006 study of residents (Kobayashi et al.) showed that the ability to be assertive with superiors was the strongest correlate with better overall communication and care.

Leonard et al. also point to assertiveness as a key element in increased patient safety through better communication. They propose the following model:

Comfort is key to assertiveness.

Note that a high comfort level on the part of the subordinate is key.



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Design Efforts to Mitigate Hierarchy

Design has also been invoked to mitigate established hierarchy in some settings.

Case Study: Richard Vosko, Architect of Sacred Space

Richard Vosko is the leader of a movement to reduce religious hierarchy through architectural design. He has championed ideas such as “church in the round” and a reduced pulpit.

By reducing the preacher’s physical position of authority, Vosko claims to have created a more participatory and democratic religious experience.



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Proximity

➤ How important are adjacencies and visual proximity to effective communication?



Significance of Physical Proximity

•Proximity Up,
Communication
Up.

•Research indicates that proximity is highly correlated to positive communication patterns in an office setting (Zahn, 1991).

•The concept is straightforward: increased face-time equates to increased comfort in communications, and decreased anxiety due to hierarchy or other stressors.

•Management
by Walking
Around

•Peters and Waterman's seminal *In Search of Excellence* recommends "management by walking about" as an effective team-building strategy, finding that casually coming into contact with employees increases the general quality of teamwork.



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Challenges to Proximity in Healthcare

• There are a number of challenges to proximity within the healthcare setting. They include:

- Rigid hierarchy inhibits desire to increase proximity
- Busy schedules of health care professionals, especially physicians
- Decentralized services
 - Nurses are increasingly spread out.
 - Physicians often have offices off-site.
- Technology use increasingly isolates staff



Backstage/Onstage Communication

- Where is communication taking place?
- Is it possible to communicate informally in these locations?



Onstage/Backstage

Onstage
Communication:

Formal
Hierarchical
Orderly

Backstage
Communication:

Casual
Non-Hierarchical
Often Challenging

- Research (Ellingson, 2003) has identified two main zones of communication in the health care setting, **backstage** and **onstage**.

- **Onstage** communication, or communication in view of patients, is orderly, follows the rigid medical hierarchy, and allows little opportunity for correcting or challenging superiors.

- **Backstage** communication, taking place in locations such as break rooms, hallways, desk areas, and other marginal spaces, often breaks these rules and turns vertical hierarchies sideways.



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“Controlled Chaos”

- Ellingson quotes a nurse practitioner as having described the backstage as “controlled chaos.” This is meant as a positive statement; the uncontrolled nature of the backstage allows it to serve as the primary site for undermining the rigidity of the traditional medical hierarchy.
- According to Ellingson, backstage communication is a site essential to improving patient care. This is because the majority of informal contact between care team members occurs here. Additionally, the majority of informal patient information, such as patient attitude and team-wide patient communication strategies, is discussed here, not in official meetings.
- As such, the backstage is essential to successful medical teams.



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Why Radiation Medicine?

- The issues listed here apply to all healthcare team settings. However, the majority of research carried out thus far deals specifically with the impact of these issues in large or critical team settings—most commonly operating theaters.
- The following investigation of physician-nurse communication in Cayuga Medical Center's Radiation Medicine unit allows for a close analysis of a particularly small care team's communication patterns, a situation not currently understood.
- CMC's Radiation Medicine unit contains only one doctor and one nurse. It also has **no backstage** (see floorplan analysis, slide 31), so all on-the-clock communication can be observed from a single locale.



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Observation: Results and Analysis

- Observational Methodology
- Data and Results
- Data Analysis



Observational Methodology

- Goal: To establish communication patterns between Radiation Medicine physician and nurse, in terms of when they occur, where they occur, and what type of communication they represent.
- Communication Typologies Recorded:
 - Exchange of Patient Information (EPI)
 - Asking for Help (AH)
 - Socializing (S)
 - Exchange of Informal Patient Information such as Mood or Attitude (EIPi)



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Observational Methodology

Observational Program:

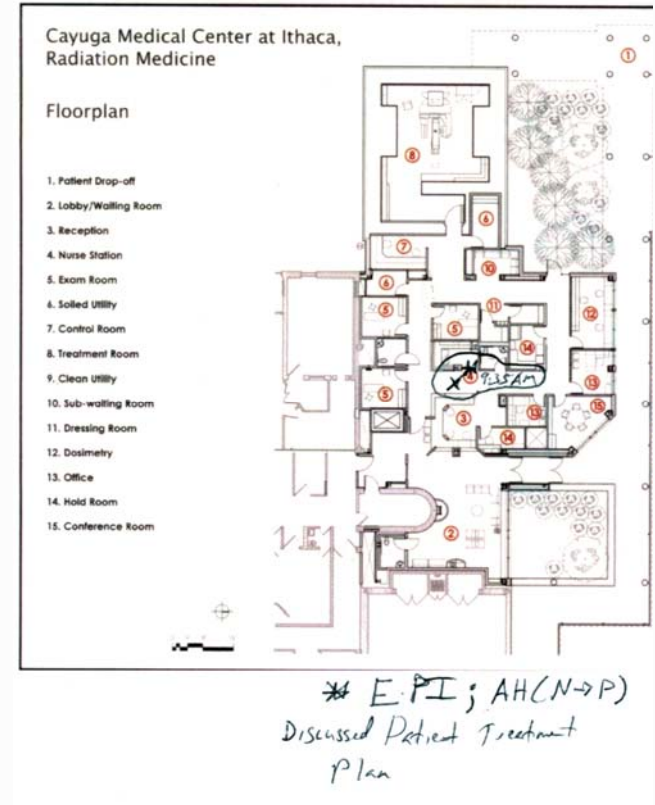
- The Radiation Medicine unit was observed for four full mornings from the receptionist's workspace.
- Floorplans were marked with the location, time, and type of communication every time a communication took place. If two different types of communication occurred in rapid succession, they were recorded on the same map. Whenever possible, the general topic of conversation was also recorded.



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Observational Methodology

In this example, the doctor and nurse had a conversation just outside of the nursing station at 9:35 AM. There was an exchange of patient information, and the nurse asked the doctor for help. The conversation dealt with a patient treatment plan.



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Summary of Data: Quantitative

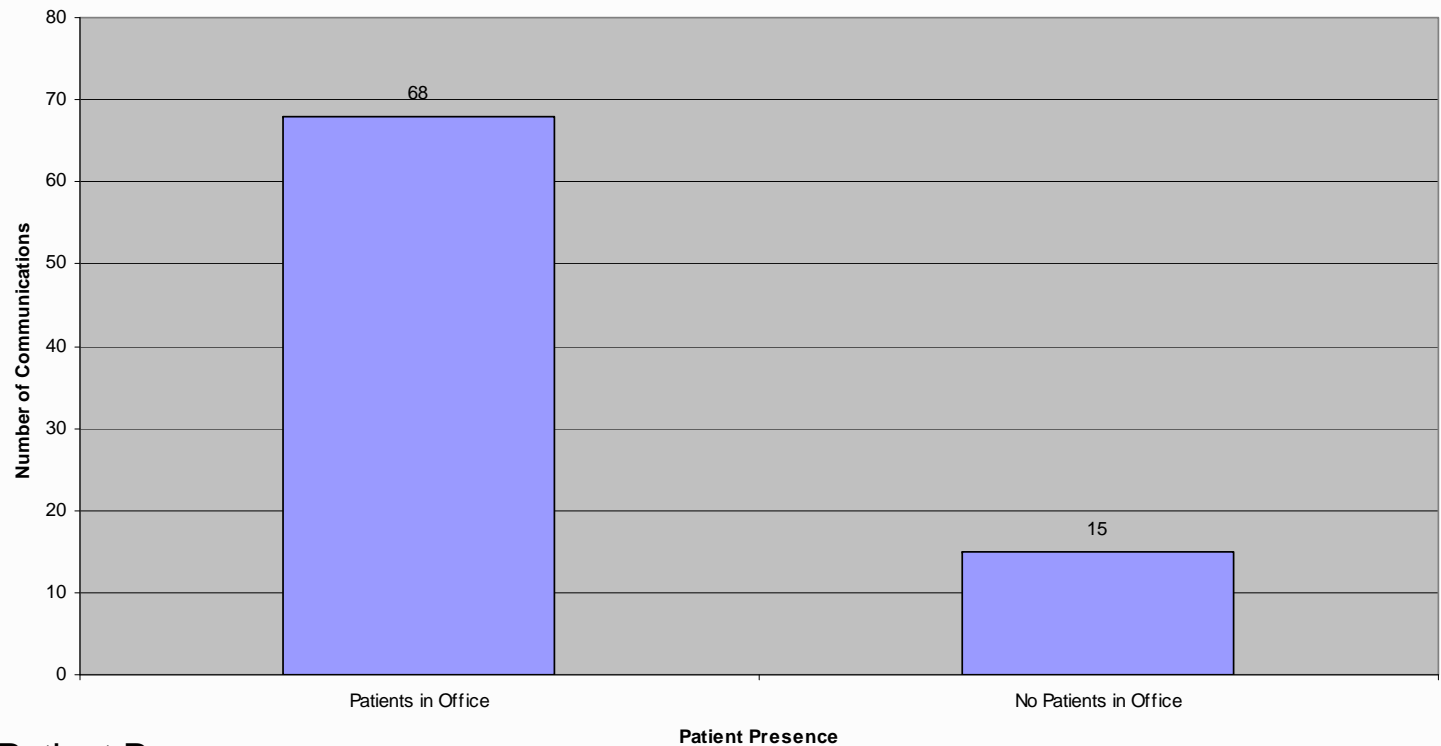
- Over four mornings, 83 different communications were recorded.
- 68 of these communications took place while patients were in the office.
- 57 of these communications took place in the direct vicinity of the nurse's station.
- Patients were only in the office for twenty percent of observed time.
- 78 of these communications were strictly professional.
- 64 of these communications directly involved patients.



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Summary of Data: Quantitative

Communications by Patient Presence

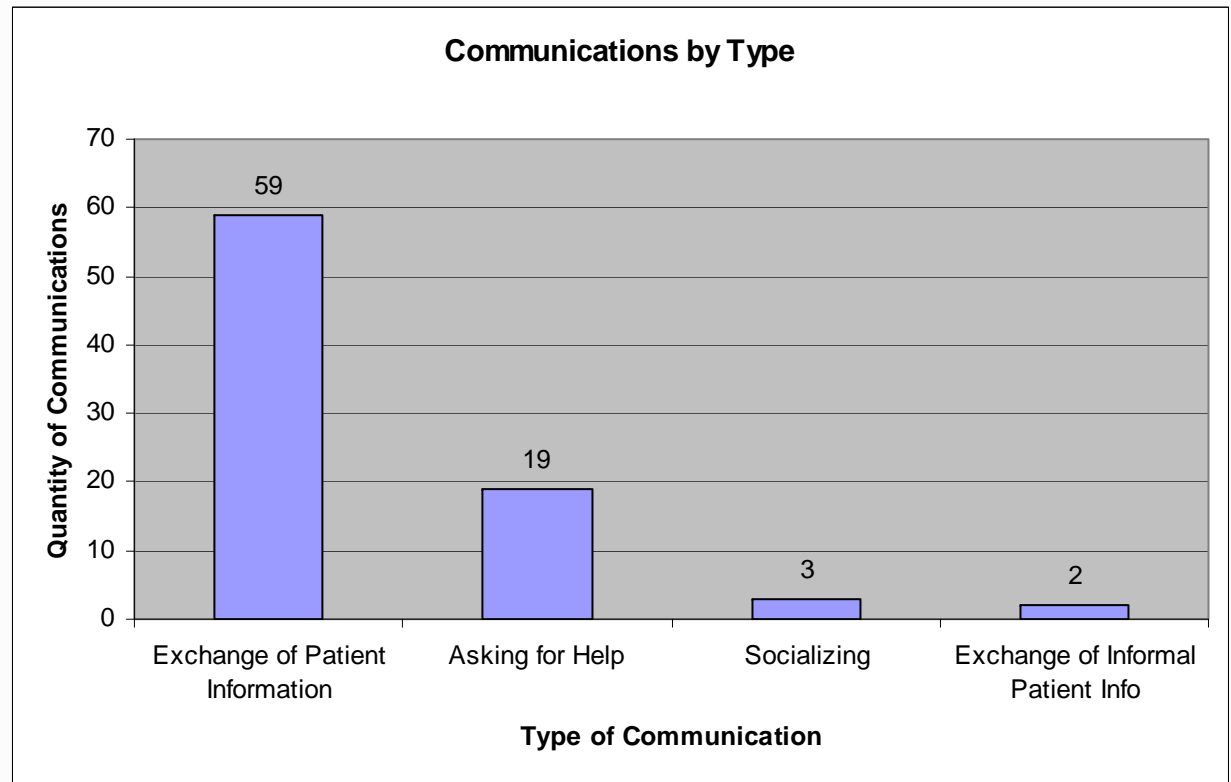


Patient Presence Strongly Increased the Likelihood of Doctor-Nurse Communication.



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Summary of Data: Quantitative



EPI and AH were by far the dominant communication typologies.



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Summary of Data: Qualitative

- Observed communication was largely collegial and professional. Nurse and physician acted with mutual respect, and it was clear they were both aware of the working patterns of the other and how to work together.
- Communication without patient presence was scarce. It is unclear whether electronic communication was ongoing, but verbal communication was rare during off-peak hours. Often hours would go by without communication between physician and nurse.
- Social and informal communication was rare. The physician would often come to the nurse with a specific issue, and there was rarely an opportunity for a serendipitous encounter.
- Physician regularly goes around back to patient areas without passing nursing station.



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Data Analysis

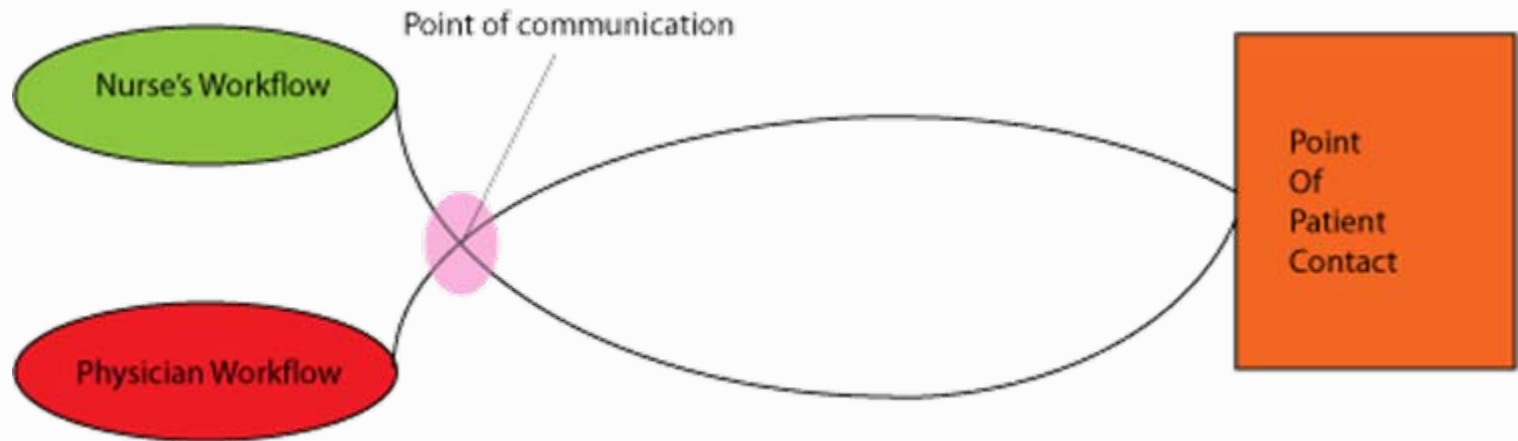
- The results imply that the conditions necessary for robust informal communication are lacking in the CMC Radiation Medicine unit.
- “Communication by proximity” also appears to be lacking here, as nurse and physician are only communicating when patients are in-house.
- Communications imply a hierarchical approach to care.
- In short, data shows that the current communication structure lacks dynamism and the opportunity for informality.



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CMC Rad-Med Communication/Workflow Model

Based on observed data/analysis, the following model was developed to describe the current situation:



Nurse and Physician Communicate when Workflows Necessarily Intersect.



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Why is Informal Communication Lacking?

There are several reasons why informal communication might be lacking in Radiation Medicine:

- Organizational

- The organizational mission might not encourage informal communication, or might even discourage it.

- Personnel

- Because there are only two individuals being observed, the communication patterns might be purely personal.

- Occupational

- The work and pace of radiation medicine might not require the same level of teamwork as other medical units.

- Design

- The design of the unit could be discouraging informal interactions.

Though it is most likely a combination of elements, the rest of this report will concentrate on the salient design features affecting communication, which are numerous.



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Why is Informal Communication Lacking?

In order to better understand the effect of design on informal communication in the Radiation Medicine Unit, it is useful to return to the three fundamental issues of health care communication, and ask whether the design of the office is helpful or harmful to each issue.

•Hierarchy

- The doctor's office is privately located, with a fully closing door and visual privacy, while the nurse's station is visibly exposed to all patient flow.

•Proximity

- The nurse's station does not have direct physical or visual proximity to the doctor's office.
- The doctor can access the exam rooms and accelerator without passing the nurse's station.


•Backstage/Onstage Communication

- There is no backstage in Radiation Medicine.
- The primary communication space, the nursing station, is visually accessible from the waiting room.



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Floorplan Analysis: Hierarchy

 = Nurse's Station

 = Physician's Area

Nurse's Station located publicly, with no visual privacy



Doctor's Office located privately, with visual privacy

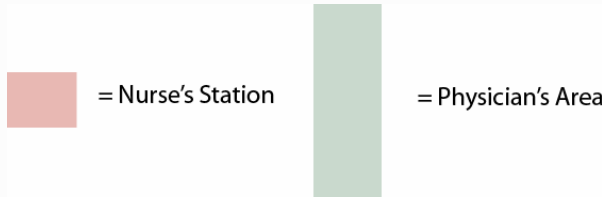


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Floorplan Analysis: Proximity

Racetrack circulation allows physician to access patient care areas without passing nursing station.

Nurse faces away from physician's office, eliminating visual proximity.



Low proximity between nursing station and doctor's office reinforces hierarchy.





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Floorplan Analysis: Back/OnStage

There is no backstage space in Radiation Medicine.



 = Nurse's Station

 = Physician's Area

The Nurse's Station, the primary point of contact between doctor and nurse, has no visual/auditory privacy from the waiting room.



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Analysis + Literature

Based on the literature referenced in this report, the data acquired from observation, and the conducted layout analysis, it is clear that the current radiation medicine is **underperforming** as a space for informal communication.

Specifically, the space fails to:

- Allow opportunities for temporary hierarchy breakdown

- Encourage proximity of physician and nurse

- Provide backstage space

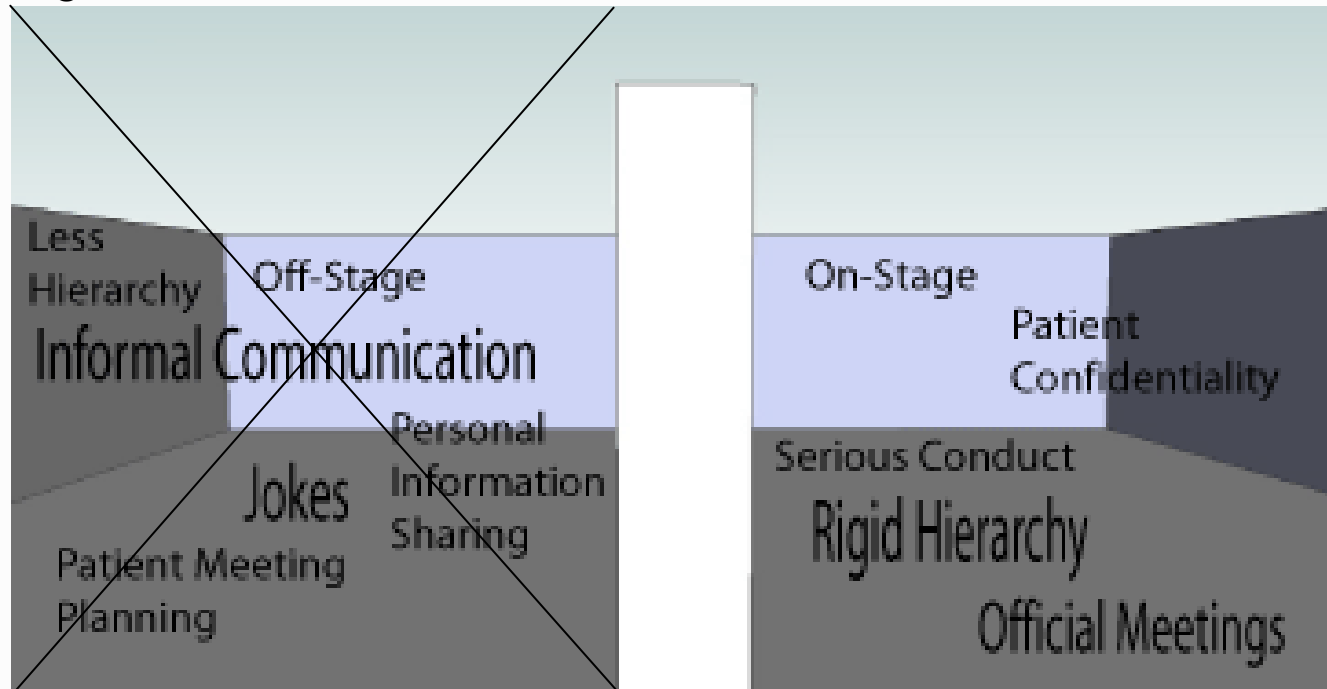
Based on the relevant literature and observations, **the lack of shared backstage space is the central problem with the current space.**



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Backstage Space

By not including Off-Stage space, the Radiation Medicine unit loses the primary locale for many of the foundational communication typologies, as demonstrated below:



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Invention: A New Design Paradigm

- Organizational Shifts: Managing Change
- Design Requirements
- Adjacency Diagram
- Potential Layout



Design Strategy

In conceiving of a new design plan for Radiation Medicine that positions physician-nurse communication as a central functionality, two approaches are taken:

- 1) **Organizational Shift Approach**, in which goals within the organization are articulated differently to employees.
- 2) **Redesign Approach**, in which
 - A) Short term interventions are identified to improve communication.
 - B) A new physical layout in the future better supports and reinforces communication needs.



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Managing Change

Observational analysis revealed behaviors harmful to effective and informal communication, such as the physician bypassing the nursing station to reach patient space. While these behaviors might be mediated by a space in which such behavior would be impossible, such a change could be more harmful than helpful if not instituted with care. As such, an organizational shift towards a team-centric approach to care would be a helpful first step.

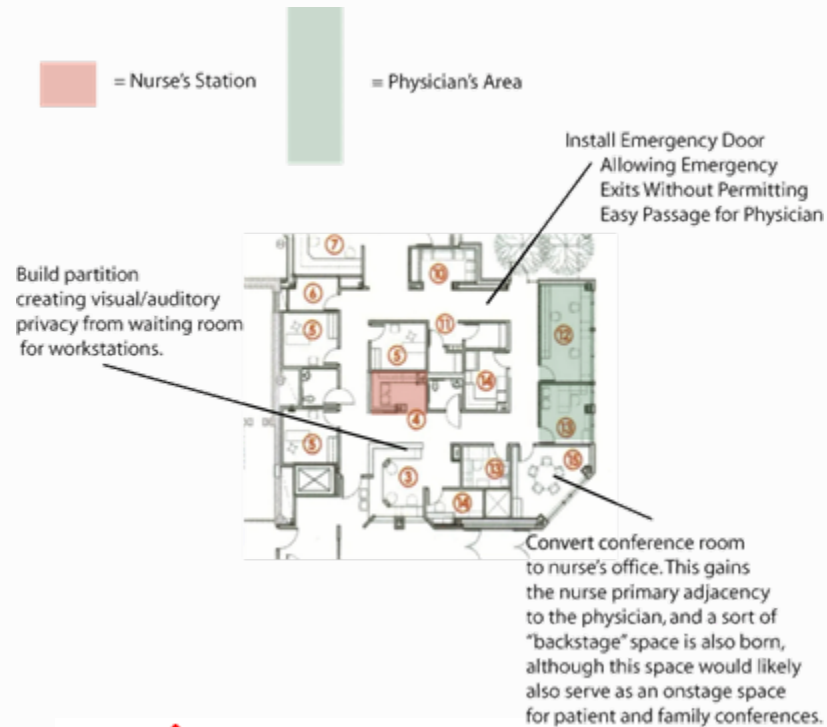
Crew Resource Management programs (see slide 7) have been shown to be highly effective in training hospital staff to communicate more effectively, both formally and informally. Investing in such a program for the entire Medical Center would be a strong first step towards a more communicative health care team.



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Short Term Interventions

There are a number of short term interventions that can be implemented within the current layout:



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Designing Change-Design Goals

A new Radiation Medicine Unit design should have the following goals:

- 1) To retain all necessary functionalities present in the current space.
- 2) To find correct “proximity balance” between nurse and physician.
- 3) To subvert the traditional medical hierarchy.
- 4) To provide effective backstage space.



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Designing Change-Design Requirements

Based on research and observation, a new Radiation Medicine Unit should:

- Recreate the current strategic adjacencies between exam rooms and the accelerator, and physician office and dosimetry.
- Create a shared workspace with primary adjacency to the nurse's station and the physician's office for off-hours to be shared by the nurse and physician when exam room monitoring is unnecessary.
- Provide a shared breakroom for nurse and physician that is secondarily adjacent to all RM services.
- Utilize a circulation system that causes the physician to pass by by the nursing station on his way to patient care space.

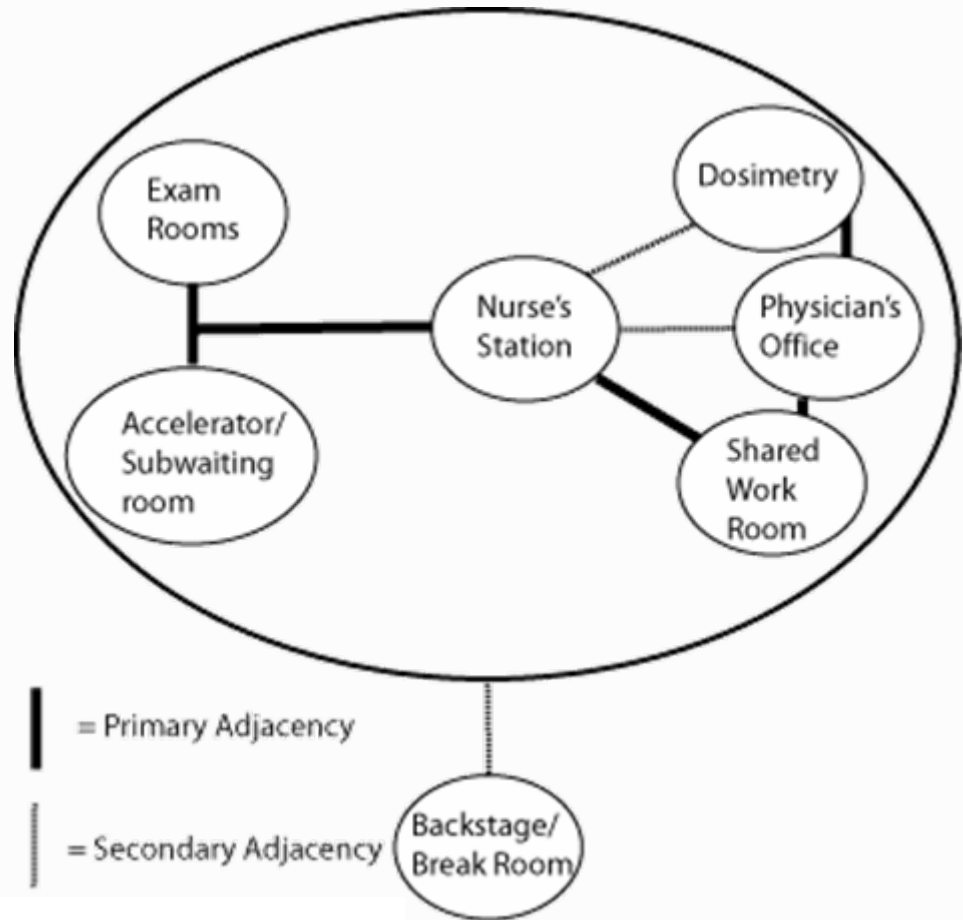


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Suggested Adjacencies

This diagram is a summary of adjacency recommendations for a future Radiation Medicine unit.

It includes two currently non-existent spaces, a shared work room and a backstage break room.

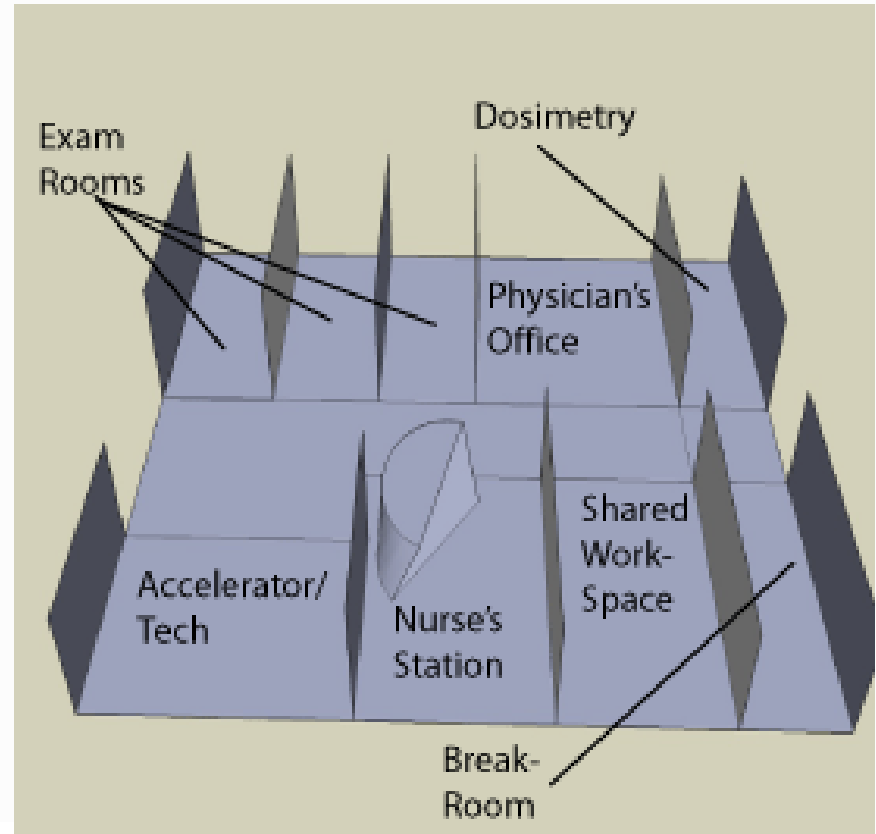


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Suggested Layout #1-Conservative

This graphic is but one of many possible layouts for the given adjacency and design requirements.

Note the strong adjacency between the physician's office and the nurse's station.



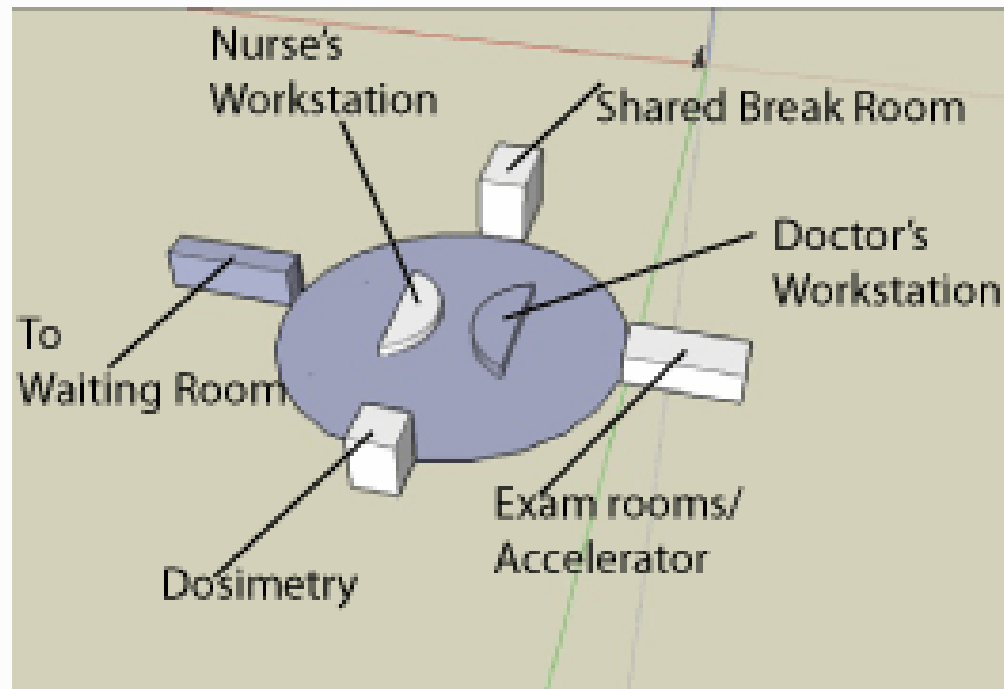
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Suggested Layout #2

This is a conceptual layout founded on the idea of a central workstation shared by a nurse and a doctor.

All other functions radiate out from this central station.

This design assumes a certain degree of hierarchical equality between physician and nurse.



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Why Should A Stakeholder Care?

Conclusions

Big Picture:

These Designs Increase Proximity (Face-Time) and Reduce Hierarchical Stressors.

More Face-Time, Less Hierarchical Stressors = Better Communication among team.

Better Communication = Fewer Errors.

Fewer Errors = Reduced Costs.



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Future Work and Conclusions

A More Nuanced Picture:

This project makes several assumptions about the functioning and efficacy of the Radiation Medicine Unit at CMC. Among them are the *need* for informal communication, and the *causes* of observed behavior.

Future analyses may find a more thorough investigation into the specific job tasks of radiation medicine specialists useful in determining the extent to which any or all of these interventions are useful for this site.

However, this report is confident in its basic assumption, that strong interpersonal and informal communication is a central and growing part of the health care world, and that design professionals must respond with creative solutions to the issues of hierarchy, proximity, and the backstage, particularly in small units where such space may otherwise seem superfluous.



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