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Personnel Factors in Effective Combat

Robert Simon
Dynamics Research Corporation

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DYNAMICS RESEARCH CORPORATION

60 FRONTAGE ROAD, ANDOVER, MASSACHUSETTS 01810 TEL. 508/475-9090 SYSTEMS DIVISION

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Dr. Dennis K. Leedom, PERI-IR
ARI Aviation R&D Activity
Fort Rucker, AL 36362-5354

SUBJECT: Delivery of Technical Notes
Personnel Factors in Effective Combat Teams

Reference: Contract MDA903-93-C-0230

Dear Dr. Leedom:

Enclosed please find the original and a copy of the subject Technical Notes under the referenced contract, which was terminated for the convenience of the government. This delivery constitutes completion of all technical requirements under the contract.

Please call me at (508) 475-9090 x2220 if you have any questions.

Very truly yours,

DYNAMICS RESEARCH CORPORATION

A. A. Rempis
Contract Manager

AAR/jb
Enc.
cc: Mr. James J. Church
Defense Supply Service - Washington
5200 Army Pentagon
Washington, DC 20310-5000

Mr. Thomas Thornton
DCMDN/GFAS
495 Summer Street
Boston, MA 02210-2184

E-1560U

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Prepared by:

Dynamics Research Corporation
60 Concord Street
Wilmington, MA 01887

PM: Dr. Robert Simon

Prepared for:

USARIARDA/PERI-IR
Ft. Rucker, AL 36362

POC: Dr. Dennis K. Leedom

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Aviation R&D Activity

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TABLE OF CONTENTS

I. Medical Team Definitions and Concepts

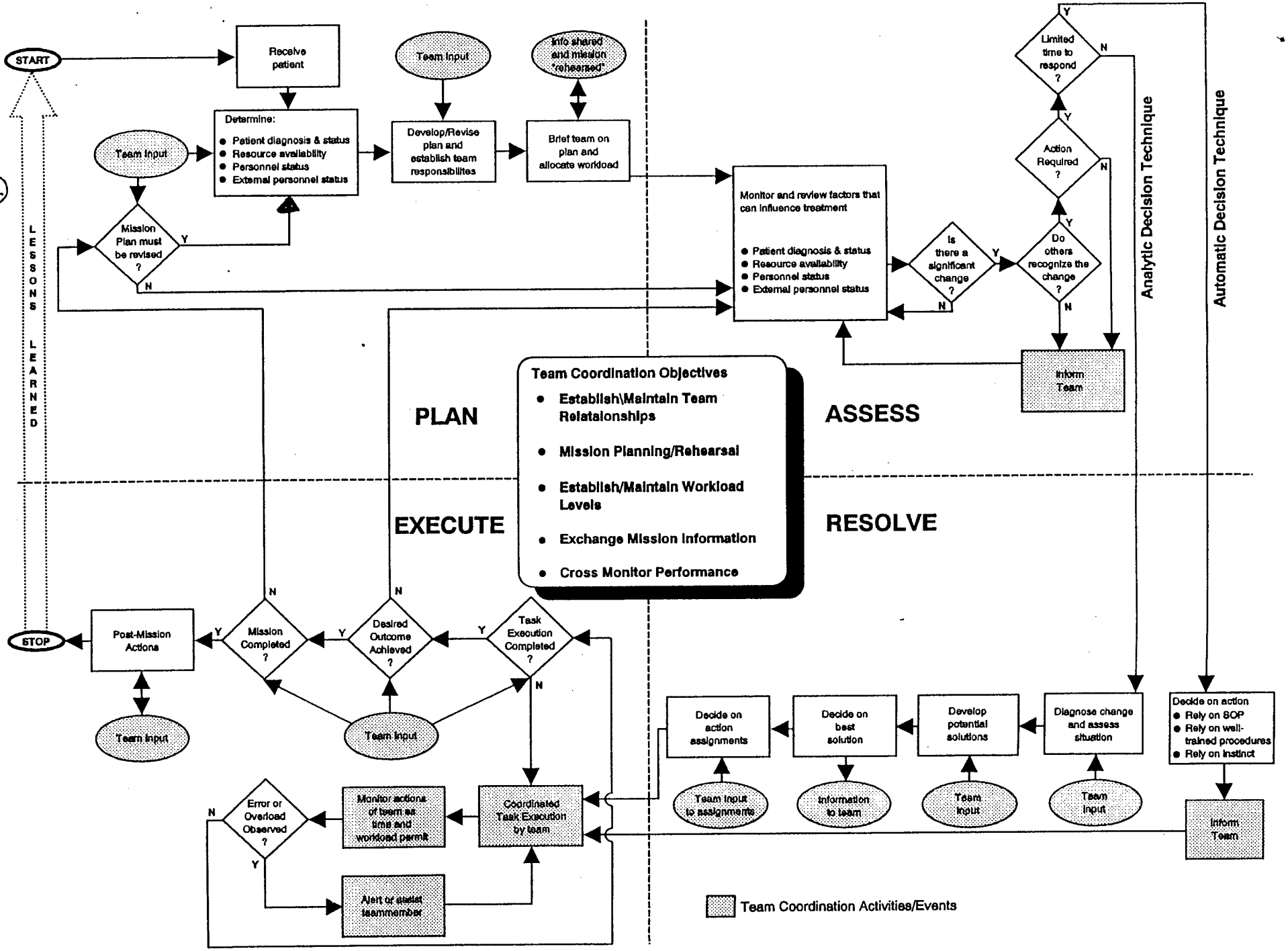
II. Medical Team Bibliography

III. Draft Data Collection Instruments

IV. Emergency Department Observation Notes

V. Teleconference Notes

The Team Coordi. .tion Model (TCM)



Team Characteristics

I. Mission and Goals

1. Teams are mission-oriented[2].
2. A team is identified by its specific mission.
3. There is a definable standard of performance.

II. Performance

1. Members perform tasks in parallel and their tasks must be coordinated.
2. Certain team tasks are routine and might be choreographed or scripted. . Circumstances may dictate departures from routine team practices and impose adaptations to an emergent reality.
3. A team can improve its performance through practice.
4. It is possible to plan a mission.
5. It is possible to have an after-action review of mission performance.
6. Decision making takes place (planned or spontaneous) that effects the entire team and its mission.
7. There is real-time, face-to-face communication.
8. , the team has identifiable start and stop times for its tasks and its mission.
9. It is possible to assess the effectiveness of a team's performance.
10. It is possible to be aware of other team member's workload.

III. Membership

1. Team membership is *structured*. The roles of leader and follower are understood by the team members, but there are opportunities for emergent leadership and followership roles depending on the demands of the mission.
2. Team membership is initially defined by the *skills* of each member. There is, however, partial overlap of skills among at least some of the team members so that workload can be distributed.
3. Based on *structure* and *skill* criteria for team membership, it is possible to partition responsibilities based on the mission and workload.
4. It is possible for individuals to identify themselves as a member of the team.
5. During the temporal life of the team, the team's mission is superordinate to the goals of the individual.

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[2] A mission has a clearly defined goal and is time-bound.

9/20/93

Possible dissimilarities between medical teams and aviation teams

Crew Coordination Objective 1: Establish and Maintain Team Relationships

Problem:

Aviation crewmembers can engage in situational leadership
Medical team members are not of equal status.

Impact: Impediment to leadership "coming from any crewmember with the appropriate technical knowledge, skills, and information at a given time."

Who is the equivalent to the PC in maintaining team relationships?

Problem:

Aviation teams plan missions and do after-action reviews by mission
Medical teams engage in daily, weekly or monthly "team meetings"

Impact: Feedback most effective soon after the event
What is focus of planning and critique: ED mission or "mission" associated with each patient?

Crew Coordination Objective 2: Mission Planning and Rehearsal

Problem:

Aviation teams have well-developed concept of mission
Medical teams do not have well-defined concept of mission

Impact: Harder to preplan missions
Harder to visualize and actively rehearse the mission
Defining the medical team mission is critical requirement
Defining the medical team operational error profiles is critical requirement

Crew Coordination Objective 3: Establish and Maintain Workload

Problem:

Aviation teams have single mission with multiple tasks
Medical teams have multiple missions (i.e., more than one patient?) with each mission having multiple tasks

Impact: Who is functional equivalent of PC in leveling workload?
When and how does training for unexpected events take place in the medical setting (other than disaster drills)?

Crew Coordination Objective 4: Exchange Mission Information

Problem:

Aviation teams are colocated over entire mission
Medical team members may not be colocated over the course of a "mission"

Impact: Announcing and acknowledging actions is problematic
Maintaining situational awareness may be affected
Requires white board or PC to facilitate communications

Crew Coordination Objective 5: Cross-Monitor Performance

Problem:

Aviation teams are colocated over entire mission
Medical team members may not be colocated over the course of a "mission"

Impact: Medical team members not aware of actions taken by other team members

Problem:

Aviation teams can accomplish mission after-action reviews
Medical teams end their shift and go home

Impact: Review of a single shift (and its many missions) left for some future review

Differences Between Ongoing Work Groups and Temporary Groups

Ongoing groups	*Temporary groups*
Used to do most organization work which is predictable, ongoing, regular.	Used for unusual projects or problems, used when diversity of opinion, talent, or expertise needed. Task forces, committees, project teams.
Job surrounded with a sense of permanency; a presumption that with satisfactory performance and the absence of unforeseen catastrophe, the group will continue indefinitely.	Job is temporary, to be worked on until done; then members are expected to disperse to some other task(s) with some other group(s).
Existence of a common identity (as a member of this department or work group) and the sense of a common purpose.	Member primary loyalty elsewhere in ongoing "home" group; often act as "representatives," not independent problem solvers. Can result in maneuvering for advantage, defensiveness about home group, hidden agendas to settle old scores. Members less committed to temporary group, may withhold their time, energy.
History of working together often results in considerable knowledge about one another and patterned role relationships; makes working together comfortable; yet danger of freezing others into existing behavior roles.	Sense of working with "strangers"; need to develop skills of building effective relationships rapidly and being effective in dealing with emergent process problems promptly.
A recognized boss: focal point for resolving issues and making decisions when all else fails. Also, a recognized source of organizational rewards.	Likely to be self-governing or led by a chairperson with less clearly defined authority and less power; rewards for effort unclear, while home group work piles up; individual members may see opportunity of contact with people from other parts of the organization (sometimes in higher positions) as way to make good impression. Can lead to "grandstanding," focus on audience not problems.

Source: Cohen, Fink, Gadon, & Willits, *Effective Behavior in Organizations*

Factors Affecting Work Group Emergent Processes (from Cohen, et al.) Compared to Crew Coordination Basic Qualities

Factor	Description	Principle	BQ
Size of the Work Group	Group size influences the utilization of resources in carrying out a task: Small groups allow closer relationships, deeper knowledge of members, better sense of the whole task picture Large groups allow greater anonymity, more people to do the work	The smaller the group the fewer total resources there are available for work: however, it is easier to obtain full participation and coordination of individual effort	
Distribution of Resources (Expertise) in the Group	The degree to which work assignments can be spread depends on the distribution of resources	The more evenly distributed are the resources (levels of expertise) of a group among its members, the more appropriate is total member participation	
Complexity/Diversity of the Work	The combined talents of several people allows for the handling of a greater amount and diversity of information Complex tasks require preplanning. Adaptation to contingencies as the plan is carried out requires understanding the rationale of the plan, and commitment to the plan.	A. The greater the task complexity/diversity, the more appropriate it is to utilize the resources of a number of people B. The more likely it is that unexpected contingencies demanding immediate adaptation will occur in carrying out a task, the greater the need for members to have full information about the work plan's rationale and be committed to the objectives of the plan C. The greater the need for individual members to make adjustments to a plan of action, the greater the need for them to share in the original planning and decision making	2
Time Pressure on the Group to Produce	The greater the time pressure, the less appropriate it is for the group to work on team-building issues	When time demands are at their lowest the team should examine ways of working to prepare itself for periods of high pressure	2, 13
Degree of Task Interdependence Required	A team is a work group that requires a high degree of interdependence among its members	The greater the degree of task interdependence required, the more important it is for group members to maintain continuing exchanges with, and have knowledge of, each other as persons	1, 7, 8, 9, 11, 12

BQs Covered

1 - Establish and maintain team climate
2 - Premission planning and rehearsal
7 - Maintain situational awareness
8 - Decisions and actions communicated and acknowledged
9 - Supporting information and actions sought from team
11 - Supporting information and actions offered by team
12- Advocacy and assertion practiced
13- Team-level after action reviewed accomplished

BQs not Covered

3 - Application of appropriate decision making techniques
4 - Prioritize actions and distribute workload
5 - Management of unexpected events
6 - Statements and directives clear, timely, relevant, complete, and verified
10 - Team member actions mutually cross monitored

Table 2.3. Taxonomy of Team Functions: Current Version

I. Orientation Functions
   A. Information Exchange Regarding Member Resources and Constraints
   B. Information Exchange Regarding Team Task and Goals/Mission
   C. Information Exchange Regarding Environmental Characteristics and Constraints
   D. Priority Assignment Among Tasks
II. Resource Distribution Functions
   A. Matching Member Resources to Task Requirements
   B. Load Balancing
III. Timing Functions (Activity Pacing)
   A. General Activity Pacing
   B. Individually Oriented Activity Pacing
IV. Response Coordination Functions
   A. Response Sequencing
   B. Time and Position Coordination of Responses
V. Motivational Functions
   A. Development of Team Performance Norms
   B. Generating Acceptance of Team Performance Norms
   C. Establishing Team-Level Performance–Rewards Linkages
   D. Reinforcement of Task Orientation
   E. Balancing Team Orientation with Individual Competition
   F. Resolution of Performance–Relevant Conflicts
VI. Systems Monitoring Functions
   A. General Activity Monitoring
   B. Individual Activity Monitoring
   C. Adjustment of Team and Member Activities in Response to Errors and Omissions
VII. Procedure Maintenance
   A. Monitoring of General Procedural-Based Activities
   B. Monitoring of Individual Procedural-Based Activities
   C. Adjustments of Nonstandard Activities

Source: Swezey & Salas, *Teams: Their Training and Performance*

FIGURE 6–1
Issues Facing Any Work Group

Issue	*Questions*
1. Atmosphere and relationships	What kinds of relationships should there be among members? How close and friendly, formal or informal?
2. Member participation	How much participation should be required of members? Some more than others? All equally? Are some members more needed than others?
3. Goal understanding and acceptance	How much do members need to *understand* group goals? How much do they need to *accept* or be *committed* to the goals? Everyone equally? Some more than others?
4. Listening and information sharing	How is information to be shared? Who needs to know what? Who should listen most to whom?
5. Handling disagreements and conflict	How should disagreements or conflicts be handled? To what extent should they be resolved? Brushed aside? Handled by dictate?
6. Decision making	How should decisions be made? Consensus? Voting? One-person rule? Secret ballot?
7. Evaluation of member performance	How is evaluation to be managed? Everyone appraises everyone else? A few take the responsibility? Is it to be avoided?
8. Expressing feelings	How should feelings be expressed? Only about the task? Openly and directly?
9. Division of labor	How are task assignments to be made? Voluntarily? By discussion? By leaders?
10. Leadership	Who should lead? How should leadership *functions* be exercised? Shared? Elected? Appointed from outside?
11. Attention to process	How should the group monitor and improve its own process? Ongoing feedback from members? Formal procedures? Avoiding direct discussion?

Source: Cohen, Fink, Gadon, & Willits, *Effective Behavior in Organizations*

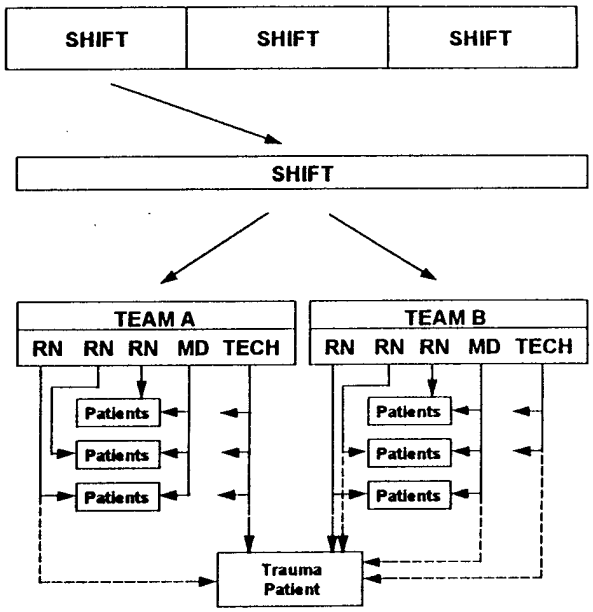
FIGURE 6-2 Common Operating Characteristics during Stages of Group Development

Stages/Issues*	*I Membership*	*II Subgrouping*	*III Confrontation*	*IV Individual Differentiation*	*V Collaboration*
Atmosphere and relationships	Cautiousness	Greater closeness within subgroups	Close within subgroups, hostility between subgroups	Confidence and satisfaction	Supportive and open
Participation	Superficial and polite	In subgroups by subgroup leaders	Heated exchanged	Individuals come in and out based on expertise	Fluid, people speak freely
Goal understanding and acceptance	Unclear	Some greater clarity, but misperceptions likely	Fought over	Agreed upon	Commitment
Listening and information sharing	Intense but high distortion and low sharing	Within subgroups, similarities overperceived	Poor	Fairly good	Good
Disagreement and conflict	Not likely to emerge; if it does, will be angry and chaotic	False unanimity	Frequent	Based on honest differences	Resolved as it occurs
Decision making	Dominated by more active members	Fragmented, deadlocks	Based on power	Based on individual expertise	Collective when all resources needed, individual when one expert
Evaluation of performance	Done by all, but not shared	Across subgroups	Highly judgmental	Done as basis for differentiation but with respect	Open, shared, developmental
Expression of feelings	Avoided, suppressed	Positive only within subgroups, mild "digs" across groupings	Coming out, anger	Increasingly open	Expressed openly
Division of labor	Little, if any	Struggles over jobs	Differentiation resisted	High differentiation based on expertise	Differentiation and integration, as appropriate
Leadership	Disjointed	Resisted	Power struggles common	Structured or shared	Shared
Attention to process	Ignored	Noticed but avoided	Used as weapon	Attended to compulsively or too uncritically	Attended to as appropriate

* Adapted from Steven L. Obert, "The Development of Organizational Task Groups" (Ph.D. dissertation, Case-Western Reserve University, 1979).

Source: Cohen, Fink, Gadon, & Willits, *Effective Behavior in Organizations*

Example of a Team-based Organization of an Emergency Department

Level of Organization	Staff and Team Nomenclature	Typical Staffing	Hierarchical Structure
4	Emergency Department	Medical Director, Nurse Manager, Charge Nurses, RNs, MDs, Med Techs, Unit Coordinators, Administrative Staff	
3	Shift	Charge Nurse, RNs, MDs, Med Techs, Unit Coordinator	
2	Shift Team A Shift Team B	RNs, MD, Med Techs (Charge nurse) (Unit Coordinator) RNs, MD, Med Techs (Charge nurse) (Unit Coordinator)	
1	Patient Care Teams Trauma Team	RN, MD, Med Tech Trauma team leader, 1-3 RNs, 1-3 MDs, Med Tech(s)	

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Structured Interview Outline

I. Emergency Department Operations

A. Describe the roles and responsibilities of
   1. Nurses
   2. Physicians
   3. ED Medical Technicians

B. When you first come on duty, what information do you need to learn about
   1. Patients already in the ED
   2. Other staff on duty with you
   3. Situational factors in the ED and hospital

C. During your shift, what information do you need to know about
   1. Patients currently in the ED
   2. Other staff on duty with you
   3. Situational factors in the ED and hospital

D. What would you identify as the ED team or teams?

E. How important is it for you to know what's going on in the entire ED?

F. How do you manage increases in your workload? Do you simply undertake more tasks yourself or do you call on others for help? How does your response to increasing workload compare to others' responses?

G. How is the effectiveness of ED activities influenced by
   1. Communications
   2. Interpersonal relations
   3. Leadership

H. Is the senior attending physician the leader of the ED? If not, who is? In what ways do the ranking physician and nurse share leadership responsibilities?

II. Vignettes

A. From your experiences in the ED, provide an example of excellent teamwork that resulted in a favorable patient outcome.

B. From your experiences in the ED, provide an example of ineffective teamwork that resulted in an unfavorable patient outcome.

III. Openness to Change

A. Describe the state of morale in the ED

B. Would you support the creation of teams? Would others support forming teams?

C. Would doctors and nurses be open to advocacy, assertion, and cross-monitoring on the part of all ED staff members?

IV. Motivation

A. What motivates you? Are you motivated to do well because of your concern with treatment effectiveness and patient wellfare, or are you motivated by the organizational need to remain competitive in the emerging medical marketplace? (Medical team dimensions 1 & 5: goals and values of team)

Observations Checklist Outline

Predisposing Conditions

A. Staffing
   1. Number of nurses
      a. Total in ED
      b. Range or mean for shifts
      c. Allocation of nurses to subdivisions of ED (e.g., acute, nonacute, triage) by shift
      d. Description of charge nurse/ nursing supervision system
   2. Number of attending and house staff (by PG level) on duty in ED
      a. Total in ED
      b. Range or mean for a shift
      c. Allocation of physicians to subdivisions of ED (e.g., acute, nonacute)
      d. Description of physicians chain of command/seniority
   3. Ancillary personnel for duty in ED (NPs, PAs, technicians, paramedics, clerical)
   4. Ancillary personnel in hospital available to ED
      a. Technicians
      b. House officers
      c. Specialist attending MDs
      d. Clinical specialists (e.g., social worker)
      e. Security
   5. Typical treatment team membership for
      a. typical not-so-critical patient
      b. critically ill patient
      c. trauma and cardiac arrest

B. Patient Load
   1. Total yearly patient load (for most recent calendar year)
   2. Average # of patients per shift
   3. Average # of adult patients per shift
   4. Average # of pediatric patients per shift
   5. Resuscitations
      a. Total per year
      b. # survived
   6. Monthly Left without being seen (most recent calendar year)
   7. Monthly AMAs (most recent calendar year)
   8. Percent of hospital admissions through ED (most recent calendar year)
   9. Patient throughput measures

C. Patient Beds
   1. Total number of beds in ED
   2. Number of trauma/resuscitation/cardiac beds
   3. Number of acute beds
   4. Number of special beds (e.g., pediatric, psychiatric, ENT)
   5. Number of Fast Track beds

D. Protocols and Standing Operating Procedures

E. Information systems
   1. Triage system
   2. Type and contents of "white board"
   3. Description of chart holding system
   4. Description of chart status reporting system (formal or informal)
   5. Change-of-shift report procedure
   6. Type and form of info systems
      a. Patient status
      b. Patient hospital records (if prior admissions)
      c. Lab results
      d. Diagnostic aids (protocols)
      e. Patient chart (doctor and nurses notes)
   7. EMS system (radio contact)
      a. Medical control
      b. Notification only (nonmedical control)
   8. ED Operations data collection
   9. Patient satisfaction feedback

F. Equipment and Support Systems
   1. Dedicated hardware systems (e.g., X-ray, CAT scan)
   2. Floor plan of ED
   3. Patient flow schematic

Observations Checklist Outline

Performance Shaping Functions

A. Staff Relationships with Patients
   1. Keeping patient informed (consultant delayed, lab tests delayed or lost)
   2. Common courtesies (introducing self, privacy)
   3. Uncooperative patient
   4. Language barrier
   5. Shift change abandonment
   6. Dealing with family or friend of patient
   7. Discharge counseling

B. Staff Relationships with each other (Basic Qualities)
   1. Establish and maintain team leadership and climate
   2. Premission planning and rehearsal
   3. Application of appropriate decision-making techniques
   4. Prioritize actions and distribute workload
   5. Management of unexpected events
   6. Statements and directives clear, timely, relevant, complete, and verified
   7. Maintenance of mission situational awareness
   8. Decisions and actions communicated and acknowledged
   9. Supporting information and actions sought from team
   10. Team actions mutually cross-monitored
   11. Supporting information and actions offered by team
   12. Advocacy and assertion practiced
   13. Team-level after-action reviews accomplished

C. Leadership

   1. Dynamic (BQ1)
   2. Procedural

Modes of Failure

A. Observed error chains
B. AMAs
C. Unusual Occurrences (e.g., variance reports)
D. Nonadherence to protocols

Medical Team Issues Emerging from Hospital Observations

ISSUES

I. Information Exchange

A. Systemic
1. Charts
a. Separate histories
b. Chart placement does not always signify patient status or updated information
2. Automated systems
a.Lab and x-ray results
b. Patient status

B. Interpersonal - Staff
1. Failures to provide information to others
2. Failures to receive information from others

C. Interpersonal - Updating Patients

II. Situation Awareness

A. MDs don't know nursing assignments (who's in charge or who is primary care nurse
B. RNs don't know MDs priorities

III. Workload Management

A. RNs and MDs do not coordinate activities
B. Secondary triage

IV.Team Climate

A. Lack of team structure
B. Professional attitudes
C. Positive and negative effects of collegial relationships

V. Leadership

A. Some charge nurses not qualitied as managers

25 October 1993

MEMORANDUM FOR RECORD

Subject: Notes from Site Visit at Newton-Wellesley Hospital on October 21, 1993

1. Robert Simon and John Morey observed in the ED at Newton-Wellesley Hospital from 1 to 8pm. Robert shadowed the charge nurses and John shadowed the acute section physicians. A shift change occurred during this period so two charge nurses and two physicians were shadowed.

Contact personnel:

Dr. Tom Buckley - Staff physician, early shift in the acute area.
Dr. Sidney Steinkeller - Staff physician, late shift in acute area.
Dr. Errol Green - Staff physician in non-acute area. Associate Director.
Barbara Yukubi (sp?) - Charge nurse early shift.
Jane Rishard (sp?) - Charge nurse late shift.
Alice Peck - Nurse manager (acting)

2. Observations

a. N-W system of triage is determined entirely by the nurses. A nurse in the front determines whether a patient is acute or non-acute. She also orders lab and x-ray tests via the computer. Folders go into a bin just behind the triage station and inside the acute area. Patients who come in by ambulance are taken immediately to the acute area. Lab results can be retrieved via the computer, but there is no mechanism to automatically alert the staff when the results are available. Patient records are not automated. Lab results must be hand written onto the paper patient record. X-ray results are put near the x-ray reading area, but no one is alerted to their arrival. Patient records/files are put in a turntable and labeled/ordered by patient room numbers. Recently, the nursing staff started to use a small white board to display room number, primary nurse, time in, and some other administrative data [I forget the other columns, but there is no patient status posted on the board].

b. ED nurses are assigned to care for patients by room number. The treatment team for a patient consists primarily of the attending physician and one nurse who is assigned by the charge nurse. A PG3 and PG2 resident and one medical student were also on duty in the ED. They did examinations, took histories, and dealt with administrative details (such as talking with consultants) on some of the patients. The white board showing nurse assignments to rooms was not always kept up-to-date and was not centrally important to tracking patients. The white board "belonged" to the nursing staff and was updated only by the nurses.

c. Workload was low when we arrived, but increased during the afternoon. Noteworthy incidents was a patient complaining of loss of function on the left side who left AMA, a 91 year-old patient in cardiac heart failure, a psychiatric patient, and three inebriated patients (one of whom was injured in a car accident). At the end of the observation period patient load was moderate.

d. The apparent error chain associated with the AMA appears to be as follows. The female patient presented with loss of some motor function on the left side, and complaints of increasing pain and tingling over the last few days. The patient was lucid and spoke of her efforts to manage some recent back trouble and remain functional at work. A nurse took some history and later reported her hierarchy of potential diagnoses: psychosomatic disorder, stroke, blood clot, or internal bleeding. The PG2 resident did an examination and reported some some inconsistencies in the patient's complaints. In consultation with the attending, the PG2 called in a request for a neurologist to examine the patient. At some point during either history taking or subsequently, the resident also asked the friend accompanying the patient if the patient had any history of mental illness. During the waiting period for the neurological consult, the patient signed out AMA. She cited the resident's asking the friend about mental disorders as the reason for leaving. She said that, between the questioning of her mental state and the lack of any apparent medical action, the staff did not seem to be taking her seriously. The charge nurse and the PG2 informed the patient that her condition was potentially life-threatening, but the patient left nonetheless. The attending physician had not seen the patient, and told the resident that he should have spoken to the patient either alone or with the resident in atttendance. The attending was concerned about the situation, but chided the resident only slightly in public discussion about the case.

e. The inebriated female patient involved in the car accident was somewhat difficult to manage. She was uncooperative with the x-ray department and at one point wanted to leave. This prompted the charge nurse in calling a security officer to detain the patient pending decrease in her blood alcohol level and suturing of a serious head laceration. Finally, the physician decided to suture the laceration. The second shift charge nurse combined both a soothing, solicitious manner with a firmness about the woman remaining and allowing the treatment. The charge nurse established a rapport with the patient to the extent that the attending resorted to speaking to the patient through the charge nurse who remained with the patient during the suturing.

f. The second shift charge nurse was clearly in charge of patient status and information flow. This nurse was especially impressive in her forthright, outspoken personality, sensitivity to her staff, and to the emergent requirements of the ED. She kept a pink copy of each patient's record spread across a shelf space as a simple management system to keep track of patient status. If she was busy with one or

another task which lowered her situational awareness, she would return to her duties by doing a complete update of the whole department. She was on top of everything in the department. She knew what was going on in each room and efficiently assigned staff and resources. We previously noted that the personality of the attending ED physician has a profond effect on ED personnel. Judging from this experience, the charge nurse also has the potential to significantly effect personnel.

g. The psychiatric patient was ambulatory. She was kept in the EMT's sitting room under security guard. It appeared that she was waiting about three hours for the hospital social worker and subsequently a psychiatrist to examine her. At one point she became agitated and threw some articles around the room.

h. A 5 year-old boy was examined for high fever. Lab tests were ordered but delayed, and some confusion arose about whether one or two tests had been accomplished.

i. A few notes on relationships with patients. One 20-weeks pregnant patient was having her history taken by the attending. Twice he allowed himself to be interrupted--once by an X-ray technician and once by a consulting surgeon. He abruptly left the patient and offered no soothing apologies to a patient who was seriously concerned about persistent headaches. The doctor had speculated on some of the potential problems (tumor), so considered the potential gravity of her condition. More considerate attention would seem appropriate. With respect to the nurses, it appeared patients were left alone for extended periods without reassuring checks by a nurse.

j. Discussions with Dr. Errol Green, Associated ED Chief, (who was on duty in the non-acute section) revealed his belief that one of the major problems in EDs is getting the cooperation with consultants and private attending physicians. Patient care is delayed as these individuals are delayed in visiting or advising the ED. Some delays are also experienced at night as technicians are not readily available. It appears that Dr. Green views these personnel as part of the "team" that needs fixing.

k. Shadowing nurses was very helpful, and getting the nurse and physician perspectives proved very useful. On-site observations will be more valuable if we can get a better idea of how knowledge of patient status is maintained across the staff.

1 November 1993

MEMORANDUM FOR RECORD

Subject: Notes from Site Visit at Newton-Wellesley Hospital on October 28, 1993

1. John Morey observed in the ED at Newton-Wellesley Hospital from 1 to 8pm. Observations were made of the entire nursing staff with additional discussions with EMS personnel.

2. Observations

a. The ED was not very busy during this site visit. No critically ill patients were treated, and patients brought in by ambulance did not require urgent care. The work flow seemed light to moderate. Two residents were on duty in addition to the attending physician.

b. A general theme of the observations was that routine information frequently did not appear available to those requiring it. Examples follow:

1. The ED secretary would ask a group of nurses gathered in the nurse's station something like " Does anyone know X about Mr. Y?" X could be either a clinical or administrative question. Sometimes a nurse would have the answer, sometimes not. Given that a specific nurse is assigned to each patient, the secretary could ask that particular nurse, and not ask the question to a gathering of nurses.

2. A patient in Cubicle 16 appeared overlooked on a number of occasions. The patient presented with what was described as "flu" symptoms although he was later admitted to the hospital. On one occasion a phlebotomist arrived in the general area of Cubicle 16 and asked no one in particular, "Who gets the IV?" The phlebotomist knew it was the patient in either Cubicle 15 or 16 (no other beds on that side of the ED were occupied). The daytime charge nurse obtained an IV setup and handed it to the phlebotomist. Why the technician had to ask the question is interesting because that information is available on a request sheet placed in a box in front of the ED secretary. On another occasion the patient was making low moaning sounds for a few minutes. A nurse-clinician in training finally went in the check on the patient. On returning to the nurses station she said in a mildly sarcastic way to no one in particular, "It's nice to know someone is with him." The phlebotomist was with him at the time. Later, two family members of the patient were talking with the ED secretary. The secretary asked the charge nurse who's taking care of him. The daytime charge nurse shook her head as if to say "I don't know." At another point, the attending physician asked two nurses for the temperature on the patient. The nurses exchanged questioning looks. One then volunteered to take the patient's temperature.

c. When the evening charge nurse (Jane Rishard) came on duty at 4pm, the nurses held a report in the break room. A short time later the evening attending physician came on duty. The day shift attending walked him around and gave him a report on patient status. Since the nursing staff and the attending arrived on duty at somewhat different times, the separate reports appear warranted. But one report involving all clinical personnel seems like a better idea.

d. The white board (which shows patient name, cubicle number, time in, and primary care nurse) was not used by the daytime charge nurse. The evening charge nurse kept the information up-to-date and consulted it to keep apprised of patient and nursing staff status.

e. The ED received two radio reports in close succession from ambulances in the field providing notification of incoming patients. The evening charge nurse did not receive this information, and was angry when the first patient arrived and was informed that a second patient was on the way. She told her staff "I need to know they're coming!"

f. EMT personnel said ED staffs at Newton-Wellesley and other hospitals sometimes want EMTs to provide field information on patients, and sometimes not. EMTs are insulted if no one asks them for pertinent information. One EMT said some hospital staff have no respect for basic-level EMT skills or opinions (but apparently do respect paramedics). He reported that EMS is a stressful job, and noted ED personnel get stressed and abrupt when they get busy.

g. One nurse was on float meaning that she was not assigned to any patients. She filled in for nurses going to dinner. However, she reported that she had no "other duties as assigned" and felt she had to go around looking for things to do.

h. The ED has some unexpected informality. Doctors and nurses are on a first name basis. Nurses do not have traditional uniforms, although one nurse was wearing surgical scrubs after her recent experience with chemically-injured firemen a few evenings before. Nurses wear various kinds of sweaters or smocks, and pants. Thus it's hard for an outsider to identify nurses as nurses, or differentiate them from other technicians. Neither attending physician wore a lab coat; both were wearing casual sport shirts and slacks. Residents wore lab coats.

3. On-site visits need to have coordination accomplished between the charge nurses on duty the day of the proposed visit. They need to be informed of the arrival of the research team, our need to shadow staff reaffirmed, and their willingness to have us observe confirmed. Some staff may prefer we not observe on their shift.

19 November 1993

MEMORANDUM FOR RECORD

Subject: Notes from Site Visit at Metro-West (Framingham-Union) Hospital on November 18, 1993

1. Robert Simon and John Morey observed in the ED at Metro-West Hospital from 1:30 to 8 PM. Robert shadowed the charge nurses and John shadowed the medical section attending physician. A shift change occurred during this period so two charge nurses and two physicians were shadowed.

Contact personnel:

Dr. Jim Taggart - Staff physician, early shift in the medical area.
Dr. Gordon Josephson - Staff physician, late shift in medical area.
Mr. Tom Chaput - Charge nurse early shift.
Ms. Sue Shannahan - Charge nurse late shift.

2. Observations

a. The ED was staffed by the attending physicians listed above, in addition to Dr. Clarence Brown and Dr. Kevin Walsh. Dr. Brown was on from 2 to 11 PM, and Dr. Walsh (a pediatrician) from 11 AM to 11 PM. A resident and medical student were also on duty until 5 PM. The high volume of children in the ED requires pediatrician coverage during the afternoon and evening hours. During periods of low pediatric workload, the pediatrician also sees adult patients. Dr. Walsh did not see patients in the medical section where we primarily were observing. However, Drs. Brown, Taggart, and Josephson saw patients in the medical and surgical sections of the department.

b. The atmosphere in the department was friendly, collegial, and oriented toward patient care. Dr. Taggart has an easy going, kidding and joking style with both the nurses and patients. Dr. Josephson is equally friendly with a more subdued sense of humor. Although we did not shadow Dr. Brown, he was noted as warm, friendly, witty, and very much a gentleman with staff and patients. Dr. Taggart took it upon himself to do simple administrative tasks (like answering telephones, pulling lab results from the printer and placing them on charts) during less busy moments. He also checked in on patients from time to time, since many were waiting for tests and lab results. Because the ED was not particularly busy, we did not observe a lot of patient management interchanges between the physicians and nurses. The doctors and nurses seemed to be operating in parallel rather than nurse-MD pairs or work groups (e.g., we did not witness many instances where the MD and a nurse were together with a patient. This observation was quite striking when a seriously ill elderly

woman came in by ambulance and was placed in the trauma room. She was initially examined by several nurses who "hooked her up" and then were completely absent during Dr. Brown's examination). However, one nurse asked Dr. Taggart to explain to her the diagnostic problem with one patient because she " just wanted to put the pieces together." The family had been asking her questions and she wanted to be informed. At another time a nurse asked a physician for an explanation of a particular malady. The doctor very patiently and professionally provided a comprehensive explanation to the nurse.

c. The nurse covering the trauma room noted that the early shift nurses and staff have been working together for a long time ("We've been through a lot together"). She seemed to think that they have worked out many of the details of workload leveling, prioritization, situational awareness, and team cohesiveness on an informal, personal basis. She noted that "We know when someone is having a bad day, and try to help that person out."

d. Dr. Taggart noted that he walks around from time to time to reestablish situational awareness; this activity was verified through observation. The charge nurse does the same thing and will occasionally ask the nurse assigned to a patient for a piece of information. But mostly, the "walking around" appears to be a very informative activity.

e. Information flow is managed through a computer-based system that uses initial computerized patient triage data to build an ED patients-in-progress display. This page shows one line for each patient that includes the (1) patient's name, age, and sex, (2) lab (ordered, in), x-ray (ordered, in), (3) nurse name, (4) doctor name, (5) whether or not the patient has been seen at Metro-West since inception of the computer system, (6) whether there is a note in the file from the patient's primary care physician, (7) time of arrival in the ED, and (8) some special color coding for unusual delays in getting lab or x-ray results. A half dozen monitors are positioned around the main nurse's station on the medical side, and one monitor at a satellite nurse's station on the surgical side. Lab results are returned on hardcopy from a printer in the nurse's station. Very few of the patients had the attending's name listed, and none had the nurse's name. The ED secretary enters much of the data like lab requests, and other updating functions. During busy times her workload results in an information bottle-neck.

f. Drs. Taggart and Josephson used a voice recognition system to create their patient notes. The software builds the text by building a complete text from spoken words or phrases, or typed text. Prompts and other help aid the MD in completing a complete record for a given diagnostic category. Dr. Taggart created a patient history within a few minutes on the system. He obtained a printed copy by placing a form in a nearby printer and having the text printed out. He commented to the resident at

one point after showing him a full page of patient history "Can you imagine writing all this out?" However, he noted that it's OK for about 90% of the cases, but burdensome for complex cases. Dr. Josephson had difficulty with the system since his voice footprint needed fine tuning. As he was entering data for one patient apparently one of the prompts necessitated him to go ask the patient a question. He returned and typed in the prompted information.

g. Nurses are assigned to rooms, but their responsibilities cover their designated room and rooms in the immediate vicinity. Nursing assignments are noted on a white board containing only room assignment administrative information and whether they eat 1st, 2nd, or 3rd within their shift (plus the more informal Saying of the Day to the other side of the assignments data). Dr. Taggart said that they used to have a more formal white board, but its use was discontinued. He said he didn't like to use it to convey patient information (e.g., "Discharge Patient"). "It makes it more personal if we tell the nurse our orders."

h. The department has a PA system that the secretary, nurses, and MDs all used from time to time.

i. A few instances of nurses failing to provide nurses notes on charts for discharged patients were observed. Apparently nurses have some difficulty in this area. A special in-box is provided for charts in need of updating, and nurses hate having to go back and recover from memory the required data.

j. Dr. Taggart gave a report on three patients to Dr. Josephson when he came on duty. He did so with the resident in attendance, but none of the nurses. During the change of charge nurse, Mr. Chaput was too busy to brief Ms. Shannahan. Then Ms. Shannahan walked through the entire department two times and asked a lot of questions until she felt on top of the situation. She said that she is more comfortable when she gets a briefing but understands that "these things happen."

k. Dr. Taggart rarely gets feedback on correctness of his diagnosis on patients he admits. When he sees billing slips on his patients (a few days after he treats them) he may follow through on his diagnosis. "When you see 50 or 60 patients a day, you would go crazy getting all this feedback." However, he does get feedback on serious admitting mistakes.

l. Three patients were happily provided a dinner tray because they had been in the ED for a few hours, and might have to wait longer for a final disposition.

m. Metro-West personnel produce "variance reports" for all unusual events, e.g., AMA, LWOBs, rape, codes, and so on. These reports will probably be a fruitful data source for us.

2 December 1993

MEMORANDUM FOR RECORD

Subject: Notes from Site Visit at Metro-West (Framingham-Union) Hospital on 1 December, 1993

1. Robert Simon and John Morey observed in the ED at Metro-West Hospital from 1:15 to 8:30 PM. Robert shadowed the charge nurses and John shadowed the medical section attending physician. A shift change occurred during this period so two charge nurses and two physicians were shadowed.

Contact personnel:

Dr. Gordon Josephson - Staff physician, day shift in the medical area.
Dr. Clarence Brown - Staff physician, night shift in medical area.
Mr. Tom Chaput - Charge nurse day shift.
Ms. Janice Whitney - Charge nurse night shift.

2. Observations

a. The ED was staffed by the attending physicians listed above, in addition to a second physician and a pediatrician on each shift. Two interns were also on duty.

b. As described in the notes of our first visit to Metro-West, the atmosphere in the department is friendly, collegial, and oriented toward patient care. Dr. Josephson is friendly with a subdued sense of humor. Dr. Brown, as noted earlier, is warm, friendly, witty, and very much a gentleman with staff and patients.

c. The early shift charge nurse, Tom Chaput, emphasized his commitment to the team approach among the nursing staff. Team-building has happened over time as staff builds trust and skills in dealing with one another. In his view the team atmosphere is unique to the ED. He indicated other nursing units in the hospital do not have the cohesiveness of his department.

d. Tom described the nurse staffing for a resuscitation in the trauma room that consists of three nurses: trauma room assigned nurse, circulating nurse, and recording nurse. During a resuscitation, the trauma room nurse takes charge of all non-physician personnel (which includes 2 phlebotomists, 3 respiratory specialists, an X-ray technician, and an ED technician who acts as a runner). As each ancillary person completes assigned tasks, they are dismissed to reduce the congestion in the small trauma room. Tasks are completed according to established protocols. In the case of potentially violent psychiatric patients, a sufficient number of nursing or security staff are assembled to grasp one arm, leg, or part of the patient's torso.

Protocols are in place for dealing with these patients. Then, for each specific incident a plan for approaching and subduing the patient is worked out based on the protocols, rehearsed, and then executed.

e. Since the ED was not particularly busy between 2 and 5 Pm, Dr. Josephson spent quite a bit of time doing administrative tasks. One was discussing with a hospital computer specialist the newly installed MEDEX system. This system includes diagnostic aids, the PDR, and a utility that accepts input on a patient's concurrent drug use to flag potentially important drug interactions. One utility that bothered Dr. Josephson was the discharge instructions tool that permits the user to print out a set of instructions for the discharged patient. Dr. Josephson's problem was that the utility does not let the user edit the text of instructions. He figures the software developer is trying to avoid liability if someone alters the text. Other administrative tasks Dr. Josephson completed was asking the hospital computer database manager to create a report of pediatric patient counts by age, time of day, and day of the week. He is trying to work out a better staffing plan for his pediatric physician coverage. Dr. Josephson also spent a good deal of time in conference with the ED nurse manager, Annette Szpita.

f. The ED uses the Press-Gainey questionnaire for evaluating the ED. This came up during a whimsical moment when someone was looking for a "noncomplaint" form because someone wanted to commend their treatment in the department.

g. Dr. Brown was tending an elderly woman with chest and right leg pain. In attempting to get a set of readings on right ventricular heart function, Dr. Brown patiently explained to the nurse assisting him what information he was trying to get. She had not understood the particular terminology he was using. So, for a few moments, across the patient, he explained the heart action, EKG leads needed, and the terminology he was using. We should call this "Win-Win" information exchange because one person gets what he/she needs, while the other person learns something new or at least isn't humiliated by asking a question or raising an issue. Another way for us to use Win-Win information exchange is to pose it in terms of a way for a subordinate to politely question a superior. The superior "wins" because he or she is cross-monitored, and the subordinate "wins" because he or she may obtain information or learn something new.

h. Dr. Brown mentioned that the ED found it took 27 phone calls, on average, to get a patient admitted to the hospital. These calls included calls to lab, x-ray, admitting, the admitting service, the attending physician, and others. During the evening he made a number of references to the need for "system engineering" to reduce the "inefficiencies " associated with operating within the ED. He also mentioned that he is very much in favor of a MD-nurse team to care for each patient.

He noted this would be hard to implement in the ED now because the physical layout of the ED is awkward.

i. Dr. Brown also expressed his policy of doing as much diagnosis and initial treatment of the patient in the ED as possible before admitting the patient to the hospital. He feels the house staff and attendings may delay (for legitimate reasons like being busy) beginning treatment. He thinks it's better for the patient and a better brand of medicine.

j. Sometime during our watch the X-ray department discontinued sending runners over to transport ED patients to the hospital x-ray facilities (the X-ray machine in the ED was broken). This fact was not conveyed to the nursing staff who on a number of occasions wondered why patients were not being picked up for X-rays.

k. The computer-based lab request & reporting system was misbehaving. Requests could be entered via a terminal, but results could not be reported as available on the patient status display. Hardcopy reports came in to the secretary and posted on charts, but staff had no way of knowing the results had been obtained.

l. A possible error chain was noted in an exchange between Dr. Brown and Janice Whitney, the charge nurse assisting him for a few moments. The patient mentioned in paragraph g was complaining of increasing right leg discomfort. Dr. Brown proceeded to conduct a physical exam of her leg, pressing it and moving it at the knee joint. Dr. Brown's initial decision on the leg was to obtain a neurological consult. Janice mentioned later that she thought the woman had a blood clot in her leg, and manipulating it was not good judgement if that were the case. However, while she was attending with Dr. Brown she did not mention her concern or suggest having another specialist evaluate the possibility of a clot. We do not know the final disposition on this patient. Nonetheless, this stands as an example of a nurse not communicating a concern to the physician (who in this case is quite open to exchanging information with nurses).

m. We noted numerous instances of physicians doing mundane tasks. In one instance a patient asked Dr. Josephson if someone could call her husband to notify him she was coming home. Dr. Josephson walked over to a phone and made the call apparently without thought of not doing it himself. On another occasion a patient's family member asked Dr. Brown if someone could get a diaper for the patient's baby. Dr. Brown found a diaper and delivered it to the cubicle. Janice Whitney did numerous housekeeping chores, such as changing sheets on stretchers, as she circulated through the department.

n. The department is experimenting with a communications system similar to the one used by McDonald's counter personnel (mikes and earphones connected to a small radio unit worn at the waist). Details of who will be issued the units are currently being worked out.

10 January 1994

MEMORANDUM FOR RECORD

Subject: Notes from Site Visit at Metro-West (Framingham-Union) Hospital on 6 January 1994

1. Robert Simon and John Morey observed in the ED at Metro-West Hospital from 1 to 9 PM. Robert shadowed the attending physicians and John shadowed the charge nurses. A shift change occurred during this period so two charge nurses and two physicians were shadowed.

Contact personnel:

Dr. Jim Taggart - Staff physician, day shift
Dr. Clarence Brown - Staff physician, night shift
Dr. Nicholas Lezama - Staff physician, 9am to 5pm
Mr. Tom Chaput - Charge nurse day shift.
Ms. Suzanne (Sue) Shannahan - Charge nurse night shift.

2. Observations

a. The ED was staffed by the attending physicians listed above, in addition to a second physician and a pediatrician on each shift. Dr. Lezama was trained in emergency medicine at Walter Reed Medical Center, had served at Madigan Army Hospital with Dr. Matt Rice, and practiced at Martin Army Hospital at Fort Benning. He was curious about our presence and was very interested in the details of our research.

b. The activity level of the ED varied widely during our visit. Patient load was moderate until about 5:30pm, very light between 5:30 and about 6:30pm, and very busy throughout the remainder of the observation period. Sue said the very busy period is typical of the evening shift.

c. A woman came to the ED with complaints of persistent vomiting and headache and was quickly ushered into a treatment room by Tom Chaput. Within a brief period he took blood samples, inserted a catheter into a large vein, and started an IV. He also learned from the patient that she suffers from a blood clotting disorder called Von Willebrand's disease. He initiated the treatment without consulting a physician ("I can't wait for a doctor") because he felt treatment needed to be started quickly, and he was concerned with her severe distress and discomfort. He tentatively diagnosed her as having the flu because of abdominal pain, nausea and vomiting, and a slight fever. When examined by Dr. Taggart, Tom mentioned that she had Von Willebrand's disease, which the patient had not mentioned to Dr.

Taggart. Dr. Taggart diagnosed the condition as migraine, and prescribed an ergotamine-based drug used for migraine. Because Tom was very busy with a variety of ED activities, he did not chart some information such as initial blood pressure. Whether he had charted the Von Willebrand's information is not known. This vignette is significant because it demonstrates how an ED nurse can use independent judgement and initiative to begin treatment, and also demonstrates communications problems.

Dr. Taggart, while he might have been aware of the Von Willebrand's information, never mentioned it. This made us wonder if he truly was aware of the condition or not, and whether his course of treatment would or should have been altered due to the patient's condition. This patient was the only one that Dr. Taggart turned over to Dr. Brown. During the turnover discussion, Dr. Taggart never mentioned the Von Willebrand's condition.

d. Tom Chaput's ability to task switch was again demonstrated during the time he was dealing with the patient described above. He also was monitoring a situation with a suicidal patient whose girlfriend was trying to sign him out. He asked John to fetch the nurse dealing with this patient and informed her that both the girlfriend and the patient could be arrested if they attempted to leave the ED without psychiatric clearance (because suicide is a crime in the Commonwealth of Massachusetts). Tom also gathered a half dozen staff members to sing "Happy Birthday" for one of the nurses and preside over a cake cutting ceremony. He also took time to tell a few nurses the "Joke of the Day" which was replacing the "Saying of the Day" posted on the nurse's assignment board[1]

e. Tom said that he uses a "grid" system to keep mental track of patient status. What he described was a mental map of the ED layout, with brief mental notes to indicate presenting symptom and current status.

f. Tom remained in the ED for an hour after his shift ended. He gave a brief rundown on a few patients to Sue who relieved him as evening charge nurse. Tom also pulled out a bound notebook and wrote a brief synopsis of his shift. He says he uses it to record unusual events and deaths, characterize the shift workload, and add simple statistics such as number of patients seen, LWBS, and admissions. It appears that other charge nurses make the same kind of entry regarding their shifts. Before departing he also took care of a small request made a few hours earlier. A nurse who came by to pick up her paycheck agreed to work a few hours that evening to cover for another nurse who called in sick. The relief nurse requested Tom get a set of OR scrubs because she could not drive home to get a uniform. He

[1] How can you tell the difference between a terrorist and a woman with PMS? Answer: You can negotiate with a terrorist. In the same vein, the picture appearing on Tom's hospital ID is that of comedian Steve Martin.

called the OR and convinced a reluctant supply clerk to provide a scrub set for a nurse who had a slight accident of a personal nature. Sue spent the first half hour of her shift walking around to get a sense of the ED status.

g. The busy portion of the evening shift began with two urgent situations. One was a patient brought in by ambulance with epistaxis (severe nosebleed). This patient is described below. The other patient was a 92 year-old woman with a heart attack who had been resuscitated by paramedics at the scene. She arrived comatose and with regular heart rhythm, but intubated and "bagged" (ventilated with a breathing bag). Sue received the paramedic's call, and told an attending physician to get ready, which he did. She also requested inhalation therapists who arrived within two minutes. She went into the trauma room and prepared equipment. She was soon joined by the trauma room nurse. Once the paramedics departed, the room was occupied by one physician, two nurses, two inhalation therapists, a phlebotomist, and an ED tech. Stabilization of the patient proceeded smoothly and deliberately, with a surprising absence of talking. After treatments had been started, everyone left leaving only the physician in attendance. The nurses had gone off to deal with specific needs for this patient. Both returned after a few minutes, and Sue continued to fill out the treatment record which she had started earlier.

h. After the resuscitation/stabilization, Sue noted the patient in one bed. "She's been put on lowest priority", referring to the staff's dealing with the heart attack victim. However, she did not step over to inform the patient of the reasons for the delay nor direct the patient's primary nurse to inform her. In other, less time-stressed situations we've noted how adept Sue is at updating patients on the course of their care. In this environment, the patient was ignored.

i. During a prior site visit at MetroWest, Sue appeared well in control of events in the ED. During this site visit, between 6 and 9pm the workload increased to levels we had not witnessed before. However, Sue seemed to have difficulty ascertaining information on patient status and in general managing the flow of patients through the department. She spent a good deal of time reviewing "waiting to be seen" charts to select patients for bed assignments (obviously, this is a secondary level triage). She also seemed to be poorly informed by her nursing staff as to the situations with their patients. She commented at one point that the doctors on duty were "slow" in dealing with patients. She was abrupt with one nurse during a shift supervisor's meeting to determine available specialized bed resources, and was abrupt with a patient who asked why his treatment was being delayed.

j. On two occasions Sue dealt effectively with LWBS-type situations. For one genuine LWBS, she told the primary nurse to call the patient and inform him or her that the x-rays were negative but that follow-up with the patient's regular physician should be considered. In the second situation, the parents of an infant were

instructed to sit in the waiting room to await laboratory results. The physician could not find the parents later, and Sue told the primary nurse to call them with the results.

k. Two situations arose in which patients were being sent to the ED by their personal physicians, but no contact had been recorded between the referring physicians and the ED staff. No one seemed to know that these patients were coming in. The exact circumstances of why this information was not available is not known. Our impression is that the information was not recorded and made available to both the MDs and charge nurse.

l. Dr. Taggart prefers to make calls to residents and attending himself instead of asking the unit secretary to get doctors on the phone. Using the computer system, he looks up who is on call and their number. He then calls and, if there is not an immediate answer, he leaves his beeper number. He said that this was quicker for him and it was the only way he could be sure that the MD had been called. As an observation, this practice seems appropriate during low workload periods, but inappropriate during periods of high workload.

m. One nurse did not receive lab results for more than 2.5 hours. She brought this to the attention of Dr. Taggart. The observers agreed that it would have been more appropriate to bring this to the attention of the charge nurse since they care about these matters and take action to remedy the situation and the system. Nevertheless, Dr. Taggart wrote a quickie note to the Chief of Emergency Services informing him of the instance.

n. More than an hour before Dr. Taggart's shift was over, he changed his focus to extricating himself from work by reducing the number and type of patients he saw and attempting to obtain disposition on all his patients. He only turned over only one patient to Dr. Brown. Dr Taggart was able to depart from the ED at approximately 3:10.

o. Drs. Lezama and Brown believe that one of the reasons that the unit is so good is because of its "high degree of professionalism." Later, when the ED Nurse Manager was asked how many CENs were on her staff, she indicated that it was 6 of about 50. This led us to notice that the nurses at MetroWest tend to stay employed in the department for a relatively long time (at least, longer than Emerson) and seem committed to emergency medicine. Whether they are CENs may be only a secondary indication of professionalism.

14 January 1994

MEMORANDUM FOR RECORD

Subject: Notes from Site Visit at Metro-West Hospital on 13 January 1994

1. Robert Simon and John Morey observed in the ED at Metro-West Hospital from 1 to 8 PM. Robert shadowed the charge nurses and John shadowed the attending physicians.

Contact personnel:

Dr. Jim Taggart - Staff physician, day shift
Dr. Nick Lezama - Staff physician, 11am to 7pm shift
Mr. Tom Chaput - Charge nurse day shift.
Ms. Sue Kinealy - Charge nurse night shift.

2. Observations

a. The ED was staffed by the attending physicians listed above, in addition to a second physician and a pediatrician on each shift. Because two medical students were accompanying Dr. Kathy Morrow who relieved Dr. Taggart, John shadowed Dr. Lezama from 3 PM until 8PM.

b. The activity level of the ED varied widely during our visit. Patient load was light until about 2:30pm and continued moderately to very busy until the end of the observation period.

c. Dr. Taggart appeared to be more of a clock watcher today. At around 2PM he made the comment, "Fifty-eight more minutes to go." He also seemed to be more superficial in his dealing with patients, in contrast to earlier observation visits where he seemed more engaged.

d. Two visiting medical students spent about a half hour with Dr. Taggart before he departed for the day. He described prioritization of the patients like this. "There are some you worry about. Others you don't. You kinda put those at the back of your mind, if you know what I mean." He described this in a lighthearted way, in much the same way he described his approach to three motor vehicle "accident" victims brought in by ambulance. The EMTs explained that the car had no evidence of having been in an accident, and they felt that the three patients were faking their injuries (sore backs and necks). Dr. Taggart examined one victim, and explained that he saw no evidence of real injuries. He did order a cervical spine series for this patient, however, which showed up negative. These patients were subsequently discharged (one with a letter relieving him from work for a couple of days). Dr.

Taggart conveyed his disbelief of the patient's having any injuries in a very jocular way. It is not clear whether he provided an inferior medical evaluation, but he certainly conveyed an inappropriately lighthearted attitude to the medical students.

e. Dr. Taggart did a chart review of the five patients he was handing off to Dr. Morrow. Tom Chaput did a complete room-by-room review with his replacement. Previous to this observation, we had not seen such comprehensive hand-offs at MetroWest.

f. Dr. Lezama provided a series of observations on lack of teamwork and effective communication. A number of instances could provide scenario examples of the current ED medical team problems. A somewhat trivial appearing incident occurred with a patient who subsequently signed out AMA. As Dr. Lezama was passing by a cubicle, the patient's husband asked Dr. Lezama if his wife could be helped to the bathroom. Dr. Lezama checked and say no nurses were in the area. He then went off to deal with one of his own patients and apparently forgot about the man's request. When Dr. Lezama returned to the vicinity of the patient's cubicle sometime later, the husband asked angrily about his earlier request. Dr. Lezama said out loud to no one in particular, "This patient needs to go to the bathroom." A nurse standing in the next cubicle heard the request, but did not respond. A few minutes later the nurse returned and did accompany the patient to the bathroom. The nurse did not intervene in the situation to volunteer that she would take the patient to the bathroom once she completed her current task. Perhaps an hour later the patient stated she wanted to leave AMA. Dr. Lezama, who was having difficulties in diagnosing or treating his other patients, was quite abrupt and annoyed with her, saying at one point, "if you leave against medical advice, I don't want you coming back to sue me!" He later had a more civil conversation with her, but the initial interchange was very discourteous. He may have had some specific frustrations with providing care to this woman, because we recall some discussion about delays in obtaining some lab tests or x-rays for this patient.

g. Dr. Lezama was not having a particularly good night. One patient came in with a severe back strain sustained from sledding. The patient said to him as he entered the room that she remembered him from an earlier visit for a severe headache. He had done a spinal tap on her. The test was negative, but she explained she returned to the ED twice that night, had spinal taps, and was finally diagnosed as having spinal meningitis. Another patient had a dislocated shoulder, and despite a good deal of manipulation on Dr. Lezama's part, the shoulder could not be successfully aligned. He had to call an orthopedic specialist to reduce the dislocation.

h. A very interesting case of a middle-aged man who had become confused because of some lost cortical functioning (e.g., he answered the question of what

year it was by saying "Wednesday") engaged Dr. Lezama's interest. He ordered a CAT scan and some blood tests. The patient eventually went for the CAT scan (which proved negative). A few hours after the patient was initially seen, Dr. Lezama returned to check on the patient. He was told that the blood work had not been done, because neither the nurse or the phlebotomist could find a vein to draw blood. Dr. Lezama was quite upset, because if he had been apprised of the situation, he could have drawn the blood himself and had the results in hand. After the explanation of the reasons for the delay, he successfully drew the blood and sent the sample off to be analyzed. At no point did the primary or charge nurses inform Dr. Lezama of the problem with drawing the blood.

i. During an earlier episode, Dr. Lezama became involved in discussions about a patient being brought in by ambulance from a doctor's office. The patient's doctor had called and ordered the ED staff to do an ultrasound on her "immediately on arrival." Other staff members had taken a radio call from the EMTs announcing their imminent arrival and the circumstances of the case. While standing at the nurses station dealing with his patients' status reports, Dr. Lezama was approached by a technician from the ultrasound department. She quickly involved him in various details that she had received about the arrival of this patient. Dr. Lezama allowed himself to get drawn into discussion with the technician about the case, of which he knew nothing. He did not refer the technician to the charge nurse. Meanwhile, the patient arrived by ambulance, and was brought to the edge of the nurses station where Lezama and the technician were embroiled in the details of the unfolding situation. The EMTs entered the fray wanting to know what to do with the patient so they could got out and answer another call. *This is an example of the nurses knowing things the doctor did not and vice versa.*

j. Dr. Lezama gave a cursory hand-off to Dr. Brown who relieved him at 7PM. Dr. Lezama remained in the department for another hour in his attempt to reduce the dislocated shoulder.

k. A 36 year old overweight male presented with a swollen and sore right calf. The previous week he had been at the ED with lower back pain. The charge nurse brought him to an examination room and told him to prepare for the exam. After her cursory exam, and upon questioning from Robert, she said that she thought the patient had phlebitis. She did not tell the staff nurse nor did she mention this to the physician. The patient was in the ED undergoing various tests and an examination before a definitive diagnosis was made. During this time, the patient was walking around, sitting up on the bed with his legs over the side, etc.-- all of which was noticed by Robert. About two hours later and during one of our trips around the ED, Robert mentioned to Sue that the patient was not being treated as though he might have phlebitis. Sue then went to ask Dr. Lezama whether he had a diagnosis or not. He looked up the blood test results and stated that the patient had phlebitis

(although they used some other technical word). Sue then went back to the patient to see if he was lying down. He was. At this time, she still did not tell the staff nurse of the diagnosis. Had Sue told the staff nurse or the doctor of her initial (correct) diagnosis, this patient would have been handled more carefully, i.e., stay in bed. Furthermore, even when the information was available in the system, the doctor had not retrieved it until prompted. Then when the diagnosis was made, the information was not deployed to those who were involved with the care of this man. As it was, he was exposed to an avoidably dangerous situation.

l. Sue spent an inordinately long time (20-25 minutes) figuring out the shift's dinner schedule. An activity of this sort should be done (1) in a shorter amount of time, and (2) off-line from regular, patient-centered duties.

m. It was noted that several RNs were not wearing obvious name tags and that Dr. Taggart's name tag was worn inconspicuously down around his waist. We have stated before that easy identification of ED staff is a courtesy to patients and appears to set patients at ease because they know who they are dealing with.

10 December 1993

MEMORANDUM FOR RECORD

Subject: Notes from Site Visit at Emerson Hospital on December 9, 1993

1. Robert Simon and John Morey observed in the ED at Emerson Hospital from 1:30 to 9 PM. Robert shadowed the charge nurses and John shadowed one of the two attending physicians. A shift change occurred during this period so two charge nurses were shadowed. One attending physician was shadowed for the entire period.

Contact personnel:

Dr. John Joseph - Attending physician
Dr. Todd Pritzer - Attending physician
Ms. Maureen Waldron - Charge nurse day shift.
Ms. Cindy Whitney - Charge nurse evening shift.

2. Observations

a. The ED was staffed by Dr. Joseph and another attending physician who was replaced by Dr. Pritzer for the evening shift. Dr. Joseph normally would have had a tour from noon until 9 PM, but came in two hours early because the ED was unusually busy. The charge nurse is not a permanent position in the ED, but is designated by the nurse manager from among the staff nurses. For most shifts the nurse in charge is an assistant nurse manager in the ED. In addition, a nurse from one of the medical services was assigned to the ED to fill in for a nurse who called in sick. This temporary nurse remained in the ED for about three hours before being called back to her floor.

b. Emerson Hospital provides paramedic service to the community. The paramedics are stationed at the hospital and respond in their own specially-equipped vehicle when ambulance crews call in for advanced life support services. The paramedics were usually in evidence around the ED, but do not have assigned duties for patient care. There are occasions when they may be called upon to offer assistance, however. For example, since they are very skilled in establishing intravenous lines, the ED staff might ask their assistance for particularly difficult cases.

c. The ED is currently undergoing extensive renovation. Facilities that have been completed are a two-bed capable trauma room, a suturing room, and a partially completed cast room. Undergoing renovation, but still in use, are an OB-GYN room and ENT room. A large open bay area provides eight beds for all other patients. An outpatient area is under construction. Two rooms with permanent partitions and

doors are available in the open bay area. These rooms are used for psychiatric patients, and anyone else requiring more privacy than available in the ward-type acute area. Two beds in the bay area have cardiac monitoring and resuscitation capabilities. The nurses station opens directly into the bay area.

d. The Emerson ED does not have automated patient status systems. Laboratory reports are available from a printer in the nurse's station. A Micromedex information system is available on a PC. There is no patient status white board in use. Patient charts are posted in a bin-type structure with compartments for "To be seen by nurse" and "To be seen by Physician" for initial evaluations, and individual bins for each bed once initial evaluations have been completed. Charts of patients needing subsequent nursing actions are placed in a rack on the nurses station. With the exception of this adjunct chart holder, there is no way of signalling charts that have new information or changed patient status. Dr. Joseph says one problem with the bin system is there are charts that need action, but they may not be checked by either a doctor or a nurse. Although he takes credit for designing the bin system, he has not perceived the need to modify it to signal changed chart status.

e. Dr. Joseph is very much concerned with "efficiency" in the ED, and frequently commented on it as something that causes him irritation or concern. He had specific complaints as follows:

1. Nurses who have been at Emerson Hospital for some years who don't work very hard. He characterized some nurses as "lazy." He described the evening charge nurse as "not very smart" and "lazy." He did not characterize all the nurses in negative terms. However, he expressed a good deal of respect for the paramedics.

2. He commented that ED nurses frequently call in sick. This requires floaters from other floors. Dr. Joseph expressed displeasure with these nurses who are not familiar with ED procedures.

3. Dr. Joseph complained that about an hour before shift changes, some nurses start to "get lazy", begin straightening up, and start to put off dealing with patients.

f. Nurses are not assigned to specific patients. Instead, they are assigned to areas. This may be a function of the disruption in the ED layout. Dr. Joseph stated it is sometimes hard to get a nurse to carry out some order on a patient.

g. Dr. Joseph had a very pleasant way with patients and seemed concerned with their care. Privately, though, he commented frequently about doing things in order to avoid liability. He didn't seem inclined to do simple things for patients like

getting a blanket, but we did not observe a situation that required him to perform such routine services. Dr. Joseph was jovial with the paramedics and the unit coordinator (i.e., ED secretary), but generally not with the nurses. He interacted with the nurses in a business-like "this needs to be done" manner.

h. An episode with a six-weeks pregnant woman pointed out the awkwardness of the physician-nurse relationship in the ED. The woman had suffered a miscarriage and needed to be told of the fetal demise. Dr. Joseph called the woman's obstetrician who told Dr. Joseph to tell the patient the unhappy news. Dr. Joseph did so in private without our being present. Apparently during the time that Dr. Joseph was giving the news to the woman and her husband, the nurse taking care of the patient happened into the room and quickly withdrew. Afterward, the nurse apologized for coming into the room saying that she "thought she could help." Dr. Joseph seemed put off by the nurse even thinking of getting involved, but softed the awkward exchange by saying, "It's not your fault. It's a difficult situation." However, he had not informed the nurse of the diagnosis or coordinated with her any plans for dealing with the situation. The nurse was the floater who had been assigned to the ED from another service.

i. Dr. Joseph indicated that the ED physicians have a feedback system on patients seen in the ED. He did not have an example to show us because of the disruption due to the renovation.

j. Dr. Joseph mentioned that about an hour before shift change when he goes off duty, he will negotiate with the other attending to take only the "quick" cases. Apparently Dr. Joseph works shifts that do not coincide with normal shift changes. Regarding two physicians taking care of a patient, Dr. Joseph explained that it is a situation where the original attending can be sued if something goes wrong after he has turned over the patient to another physician.

k. There is a distinct lack of effective communication between the nurses and physicians, no shared vision of patient status, and no air of professionalism among the nursing staff.

17 December 1993

MEMORANDUM FOR RECORD

Subject: Notes from Site Visit at Emerson Hospital on December 16, 1993

1. Robert Simon and John Morey observed in the ED at Emerson Hospital from 1:15 to 9 PM. Robert shadowed two charge nurses and John shadowed two attending physicians. Another physician was on duty overlapping the day and evening shifts.

Contact personnel:

Dr. Jim Wolff - Attending physician day shift
Dr. Alan Woodward - Attending physician evening shift
Ms. Rose Marie Salacky - Charge nurse day shift.
Ms. Mary Lou Cunningham - Charge nurse evening shift.

2. Observations

a. In contrast to our experience during our initial visit to the Emerson ED, the staff relationships between the physicians and nursing staff seemed to be more cordial and professional. One of the charge nurses is a CEN, and some of the staff nurses were also CENs which provided a more professional attitude on the part of these nurses. However, communication and information flow between nurses and physicians, and between staff and patients, is a noticeable problem. The department was initially quite busy when we arrived, but from about 6 PM to 9 PM patient load was light. No really critically ill patients arrived in the department during our visit.

b. Dr. Wolff appears to have a reasonably good professional relationship with the nurses. Many staff in the ED addressed him or referred to him as "Wolffy." In the case of a patient who had some form of mild heart attack a few days ago, the nurse showed Dr. Wolff a segment of the EKG that concerned her, and he made a tentative diagnosis. The interchange seemed to confirm in both their minds that the patient did in fact have a heart attack. The nurse said, "I'm glad I did a cardiac work-up." Dr. Wolff replied, "Good work, Paula" in a cordial and reinforcing way. At the end of Dr. Wolff's shift, he was finishing up some reports. One of the nurses mentioned his going off shift during a particularly busy day. Dr. Wolff said to the nurse, "It was fun working with you."

c. Dr. Wolff told John that he was too busy during this shift to spend any time talking with us about the project. He did mention that he thinks nurses and MDs should work as teams. However, Dr. Wolff was singled out by one of the nurses as

"not working the system." By this she meant that he misplaces charts and does not communicate well with the nurses on patient status.

d. No hand-off of patients was observed between Dr. Wolff and Dr. Woodward.

e. Dr. Woodward spent about an hour discussing the ED renovations with us. He designed this renovation, and discussed the details of the trauma room layout. Although he is unfamiliar with the term human factors, he described a number of human factors considerations he used in laying out the trauma room. These include accessibility to oxygen, suction, and blood pressure equipment mounted on a room-wide 12" x 12" service box behind the beds, heights and layouts of cabinets and shelving, and expansion capabilities for computer terminals and other new technologies. Dr. Woodward provided us two references on ED design.

f. Dr. Woodward showed us a copy of the resuscitation record. Key data, such as vital signs, medications, and start-stop times for defibrillation, are recorded every 2 minutes. One ALS ED nurse is assigned this duty during the day shift; the hospital nursing supervisor performs this duty during other shifts. "Codes" for the ED are not broadcast throughout the hospital. This prevents a large number of people from descending on the ED, as they do for codes in other areas of the hospital. The ED calls in the type of help needed for its codes.

g. A nurse-clinician said that the nurses spend too much time looking for people and paperwork. This was confirmed in observing Dr. Woodward who had finished suturing a patient's finger. He came to the nurses' station and was at a loss about what nurse to ask to put a dressing on the patient's finger. Finally someone within earshot of his asking who could help said she would. Dr. Woodward also asked a medical technician (who was making an unrelated phone call) to call the patient's employer about the status of the patient's tetanus immunization. The medical technician did this despite the fact he is not a unit secretary. About an hour later Dr. Woodward (out of the blue) asked someone at the desk where the patient was, and was told the patient had left. Woodward expressed some alarm about whether the tetanus issue had been confirmed, and someone within earshot said it had. Woodward was not part of the process of bringing closure on this patient (and John did not recall Dr. Woodward giving specific discharge or hold orders pending the confirmation of the tetanus issue).

h. Dr. Wolff and one of the other physicians routinely type discharge instructions themselves on the the ED record, a copy of which is given to the patient. All the doctors on duty dictate patient history and physical into a telephone dictation system. Someone in medical records transcribes the dictation, and a report is sent back within a half-hour to the ED. Within the next two or three years the ED will use

a Kurzweil or CIAC system to create patient records. Emerson is delaying installing a system until completely free text input is supported. Other electronic means of entering patient identification information, laboratory and other clinical data will be integrated into this patient record system to create a "totally paperless patient record", in Dr. Woodward's words.

i. Dr. Woodward explained the MicroMedex system to John. We were concerned with the level of confidence the physicians place in the information contained in the system. Examples of information available is pharmacological information on drugs, drug interactions, toxicology information on thousands of household and commercial chemicals, and diagnostic information. Within an information category, synopses of information are provided. More detailed levels of information are available, including journal references and synopses of these articles. Dr. Woodward claimed the system contains the equivalent of 500 medical textbooks on a single laser disc. A year's subscription costs $12,000. Dr. Woodward stated a high level of confidence in the system's information, because of its levels of detail, the fact that about 1000 people contribute to its database, and the fact that it is updated every 3 months. It is used very frequently by the physicians, he claims. We have noted physicians at Emerson, Metro-West, and Newton-Wellesley using this system.

23 December 1993

MEMORANDUM FOR RECORD

Subject: Notes from Site Visit at Emerson Hospital on December 20, 1993

1. Robert Simon observed in the ED at Emerson Hospital from 1:00 to 9:15 PM. Robert shadowed two attending physicians. Another physician was on duty overlapping the day and evening shifts.

Contact personnel:

Dr. David Bauer - Attending physician day shift
Dr. Jim Wolff - Attending physician evening shift

2. Observations

a. Dr. Bauer is a very young physician. He is outgoing and friendly. He did not dress in medical garb and was not wearing a name tag. He was attired in a shirt and tie with no coat. He was expecting the observation and stated that he was looking forward to it.

b. There were numerous charge nurses on duty when I arrived. It was not clear who was in charge. Dr. Bauer obviously did not know who was in charge and I never pursued an answer. Later, I asked Mary Lou Cunningham why there were so many and she told me that it was probably because of holiday schedule changes and swaps. She went on to explain that personnel performed whatever duties they were assigned and that she was not always a charge nurse.

c. A trauma patient had arrived shortly before the observation period. He had fallen 20-30 feet from a ladder and sustained multiple broken bones including hip, ankle and wrist and also suffered a concussion. By the time I arrived, several x-rays had been taken and initial lab work started. The immediate care of this patient seemed to unfold very smoothly. There was one primary nurse assigned to the room (and thus the care of this patient) and other nurses appeared from time to time in a very fluid and appropriate manner to assist with one thing or another. The medical technician was responsible for establishing the Foley catheter. Dr. Bauer examined the patient and ordered additional x-rays and stated that he planned to stitch the patient's chin. He then left the room and did not return to this patient for at least an hour and twenty minutes. While Dr. Bauer was examining another patient the trauma/ortho nurse interrupted to have him sign some orders for this patient.

d. Next, Dr. Bauer examined a female medical patient. After taking her history and initial physical, he decided that he needed to do a rectal exam and went looking

for a nurse to assist. Upon leaving the examination room he asked to no one in particular "Who is on the floor?" He did not know who the charge nurse was or which nurse was caring for this patient. One of the nurses volunteered to help. Next, he ordered an x-ray and was told that it had already been ordered. Finally, he ordered some blood tests and that an IV be established. I thought it curious that an x-ray would have been ordered for this patient while blood work had not been. Later I asked one of the nurses who explained that there are specific protocols they follow in triage. If the criteria are met, then certain tests are performed. In this case, the triage nurse ordered the x-ray. However, given the circumstances of this patient, it was obvious to me that there was going to be required lab work. It would have been a much more effective use of Dr. Bauer's time if the lab results were available to him at the time of the initial exam.

e. For another patient, Dr. Bauer called to order an EEG. The unit coordinator (medical sec'y) offered to do it for him [that is one of the things she does], but for some reason, Dr. Bauer decided to do it himself. He fumbled around looking for the number, made one call to a wrong number, looked it up again and finally made contact. Then he needed transport for this patient. Again, he didn't know who to ask.

f. At 2:30 Dr. Bauer picked up yet another chart. I thought this was notable because he might have been mentally preparing to depart. With this new chart, Dr. Bauer couldn't find a nurse who might know about the patient. Dr. Bauer did not even know what bed the patient was in. His technique was to ask a group of nurses and one of them emerged to provide a response.

g. Dr. Bauer complained of the overwhelming amount of paperwork he has. On this day, he worked until nearly 7:30 to do two things. First was to finish his paperwork. Second, he tried to reach disposition or a definitive care plan on all his patients before leaving. On this day, as John witnessed on a previous observation, *there was no patient hand-off between doctors at 3:00.*

h. At 3:00, Dr. Bauer was bent over paperwork and Dr. Wolff came on duty. His first exam was in the ENT room with a patient complaining of dizziness and headaches. I heard several nurses outside the door wondering where Dr. Wolff was. Dr. Wolff either ignored their problem or was too focused on the patient to hear the nurses. The nurses were not able to locate him until about ten minutes later when he emerged from the ENT room.

i. Later in the day, a nurse (Lori) asked Dr. Wolff "Do you have ENT?" Wolff answered, "No", and went off to do some dictation. While Dr. Wolff was dictating I asked Lori if that was her way of asking Dr. Wolff to see the ENT patient. She said yes, but that she would obviously have to try again. I said nothing at the time, but she should have been clearer in her message to Dr. Wolff.

j. At about 4:30 (1.5 hrs into Dr. Wolff's shift), he still did not know which RN is in charge. He asked for Mary Lou but she was not available [or in charge]. Maureen, R.N., saw he needed something and volunteered to help him out with the discharge of a chest pain (pulled muscle) patient.

3. Impressions

a. The Emerson staff appears to get along well with one another. The Emerson observations have taken place during the month of December and there is a holiday spirit. There have been visits from a men's choir and Santa Claus. Decorations and cookies are aplenty and the expectations and preparations for Christmas are in evidence in the department. With the exception of one shift, morale seemed to be good. This one exception was during the first visit where the charge nurse I followed was young, surly, and, in my opinion not qualified for leadership.

b. The doctors and nurses do not operate as a team. Verbal communication between MD-RN is typified as being either (1) the doctor telling the nurse to do something, or (2) the nurse asking the doctor if something is OK. There is written communication, but no discussion of case history, patient symptoms or treatment.

c. I was impressed that the doctors often did not know which nurse was in charge of department resources, and which nurse was responsible for which patients. I was equally impressed that the nurses do not seem to influence physician priorities.

d. Emerson, like Newton-Wellesley, does not deal with a large number of trauma or severe medical problems. However, when there are serious cases, the staff performs well--at least in my medically-untrained eyes.

29 December 1993

MEMORANDUM FOR RECORD

Subject: Notes from Site Visit at Emerson Hospital on December 28, 1993

1. Robert Simon and John Morey observed in the ED at Emerson Hospital from 1:15 to 9:15 PM. Robert shadowed two attending physicians and John shadowed one charge nurse and the evening shift trauma room nurse. Another physician was on duty overlapping the day and evening shifts.

Contact personnel:

Dr. Deborah Gobetz - Attending physician day shift
Dr. Jim Wolff - Attending physician evening shift
Ms. Rose Marie Salacki - Charge nurse day shift.
Ms. Kathi Haroules - Charge nurse evening shift.
Ms. Paula Sirko - Trauma Room nurse

2. Observations

a. The day shift charge nurse, Rose Marie Salacki, was at lunch when the observation period began. On her return, the MD told her that a patient she had been attending prior to lunch needed some IV antibiotics. She obtained the chart from the nurses' "To Do" holder, and prepared the first of the two medications. On reaching the patient's bedside, the nurse who had relieved her for lunch was finishing up starting an IV with the same medication. This nurse had been told earlier by the MD to administer the medications. *The chart was in the "To Do" box because the relief nurse was administering the first medication and returned the chart to the box perhaps as a reminder to start the second medication.* Rose Marie had read the chart to get the medication order, but apparently no note was written because the medication was still in the process of being given. If the medicine had not been an IV with its obvious paraphernalia and the relief nurse in attendance, this might have been a case of the patient getting two doses of the same medication. Also, with respect to this patient, Rose Marie had detected two abnormal heart rhythms, but the MD had detected a normal rhythm. Rose Marie was "relieved" that an EKG had been ordered. John did not ask her if she would have become assertive and pressed for an EKG if the MD had not thought to do so.

b. Rose Marie told John that some system exists in the ED for assigning the numbers 1 to 6 to the levels of nursing care required for each patient. These numbers had been used previously for billing purposes. A number 1 refers to triage and a simple nursing intervention, a level 3 adds something like starting an IV, level 5 is a trauma or cardiac resuscitation (a "Code"), and level 6 is something above the

rest. This scale needs to be investigated for potential use as a measure of performance or a condition measure.

c. Rose Marie feels there is a definite personality type for effective ED nurses. She named assertiveness, action orientation, and independence as key characteristics. The fact that there are protocols for nurses to order x-rays, lab tests, and that nurses can take verbal orders to give medications helps to reinforce independent actions. This was corroborated in a separate conversation with the trauma room nurse, Paula.

d. Nurses who float to the ED to cover for absent regular ED staff are OK with Rose Marie if the nurses are consistent floats who have become familiar with the ED. Many floaters are not comfortable with the independence afforded the ED nurses in ordering tests or giving medications on verbal order only.

e. Over the three years that Rose Marie has been at Emerson, she has seen better allocation of staff to the high volume period of 11 AM to 8 PM. This adjustment has resulted in some staff assignments to unusual hours, like a nurse who might come on late in the afternoon and stay until 1 AM. For the most part, she feels, nurses have adapted to the sometimes unusual shift assignments because they understand the ED usage pattern. However, there apparently is still some grumbling. ED nurses tend to work consistently on the same shift, but a few will change from day to night shift voluntarily if needed.

f. More on the nurses taking the initiative issue. As the ED gets more busy, Rose Marie feels the nurses take more initiative with providing care to patients. Asked if nurses get in trouble with initiating orders, Rose said that nurses prefer to obtain verbal approvals from the physicians. Most (but not all MDs) are OK about being interrupted to give a quick approval for an order. However, some MDs do not appreciate being pulled away for a few moments to do so. When the ED is busy, RNs will put some patients ahead in the queue (How?) whose problem can be quickly resolved (e.g., removing sutures).

g. Rose Marie discussed the situation with Elsie, an older nurse whose assignment is the Main Room (1 nurse to the Main Room, 1 nurse to Trauma/Ortho/Sutures, 1 nurse to OB-GYN and ENT, and the charge nurse). Frequently, the other rooms are not busy, and these nurses will help in the Main Room. Elsie has difficulty relinquishing responsibility for all the eight beds in the Main Room. Elsie's motive was not offered for this situation, but Rose Marie said that she frequently prompts Elsie to let others care for "her" patients. Elsie is getting better about letting this happen. Rose Marie indicated she is very directive about assigning RNs to care for patients. She said that other charge nurses are less directive and that there are some nurses who don't pull their weight.

h. Nurses tend to rotate through the various room assignments, plus triage. Some nurses don't like triage, but they are required to do so anyway.

i. Kathi Haroules was the evening charge nurse whose manner and body language made it clear she did not want to be shadowed or even talked to. This attitude softened during the evening, and she joined conversations John was having with other nurses.

j. Paula, the Trauma Room nurse, described herself as assertive and take charge, and said she has no apprehension about using her judgement, challenging a doctor, or inquiring for more information. She likes to work with Kathi, whom she uses to get a confirmation that an MDs order is appropriate or correct (e.g., a specific medication used in a given situation). If Kathi concurs with Paula's concern, Paula will challenge the MD. Paula indicated she doesn't mind being educated when she challenges. Paula mentioned the situation where two or three MDs will be working on a "Code" patient, each giving orders. She described this type of situation as chaotic, and says she has forcefully made the announcement that someone has to be in charge or establish priorities. Apparently, it works.

k. A patient was brought into the Trauma Room who was suspected of having a heart attack. The patient's cardiologist was in the ED at the time and was available as the patient arrived. Dr. Wolff took a history, performed a cursory physical, ordered the routine tests and insured that the patient was stable. At this point, Dr. Wolff departed and the cardiologist assumed responsibility for the patient. Dr. Wolff did not get involved in the treatment. Paula explained that there are situations in the ED where the patient's attending physician will provide the MD care, and the ED attending will not get involved. During "Codes", Paula said, the ED attending might defer to a cardiologist or pulmonary specialist to be the MD in charge because they are the recognized specialists in this situation. However, Paula indicated some attending physicians are trusted more than others. This may imply that the ED attending may get more involved.

l. John had a long conversation with Florence Freed, a volunteer in the ED. Florence is a retired psychologist who taught at a community college and saw clients in therapy. Her job in the ED is to attend to patients' comfort needs (blankets, reading material, fetching the phone), transporting patients, and running errands. She has also assumed a therapeutic roll in helping patients and family members express their feelings about their accident, illness, or situation of being in the ED. She provided a number of vignettes of her interventions. In one case, the father of a injured child was in denial, saying something like "She'll be president of the United States, and won't have any recollection of being here." The mother, by Florence's account, was distraught and needed to cry and be reassured. So, Florence told the father to console his wife and let her cry. He did so, and started to cry himself. On

another occasion, a motor vehicle accident victim was brought into the ED during an unusually busy period. No one was with the patient as she started to question where she was. Florence said she spent considerable time with the patient helping her to become oriented, and talk about the accident, and eventually become more composed. When asked if the ED staff does this kind of therapeutic intervention, she said yes but it was obvious that this sometimes can not occur. Florence was not boastful about her acting in a crisis intervention mode, but made it clear many patients and family members need some sort of therapeutic intervention to help them with the emotions associated with a visit to the ED.

m. Dr. Gobetz was treating a patient (severe Alzheimers) for fever and bronchial distress. When we first arrived, the patient's nurse was at lunch. Dr. Gobetz wanted a urine test done which required a catheterization and asked an RN to do the urine. The RN resisted and asked whether it could be delayed until the primary returned. Dr. Gobetz said that the test took a long time for the results and she wanted to get a diagnosis on the patient, but that another 15 minute delay would be acceptable. This seemed to be the end of the discussion. About five minutes later and with nothing else being said, the (resistant) RN started to perform the test. In conversation with Dr. Gobetz, she indicated that she was anxious to get a diagnosis and disposition before she went off her shift.

n. Dr. Gobetz and Marge, R.N., discussed the care and immediate treatment of a patient. The dialogue between the two of them was the longest running, most collegial MD<->RN discussion we witnessed. They discussed what medications they would use to bring his fever down after Tylenol® didn't have the desired effect. They discussed his inability to expectorate due to a general lethargy and how they could stimulate activity through turning him on the bed and by using suction to vacuum the back of his mouth, etc. It is hypothesized that a partial explanation for this collegiality is due to the nature of female<->female relationships. We note that *all* the nurses at Emerson are female.

o. Robert asked Sue Koerper, ED nurse manager, how many of the RNs were CEN. Sue thought that about one third are certified.

p. At one point the triage nurse asked Sue Koerper if they could make up a sign to inform people about the whereabouts and hours of operation of the cafeteria. Sue liked the idea. -- Robert likes the idea a lot and would like to see us encourage hospitals who participate in our training to put up "care and comfort" signage in the ED waiting area. The signs could include Information about the cafeteria, availability of a cash machine, the gift shop, snack machines, chapel, or whatever other amenities are available for the hospital's customers.

q. At separate times, Sue Koerper and Alan Woodward commented to Robert that our presence effects the staff. Sue mentioned how her staff was aware that there were other hospitals involved in the study and they wanted to be viewed as the best. Sue thought this competitive spirit was positive. Alan, half-humorously and half-seriously, mentioned that one of his physicians provided better care in our presence.This was verified by remarks made by that physician. We should be aware that, especially in a relatively small department, our presence will be felt and will effect performance.

r. Dr. Gobetz turned over only one patient to Dr. Wolff. In fact, this patient had already been turned over to a medical doctor on call. So the patient only had to be watched in case something unexpected happened before transport came to bring him to the medical ward. Dr. Gobetz gave a very short brief on the patient to Dr. Wolff who, as expected, never had to do anything for the patient. Dr. Gobetz was finished with her all of her paperwork and patients only about 45 minutes after her shift ended.

s. We had a discussion with Dr. Wolff and another ED physician, Dr. Pritz regarding possible outcome measures for EDs. We spoke about the use of AMA, LWBS, resuscitation percentages, etc. and the strengths and weaknesses of each measure. Dr. Wolff suggested that we also consider time to thrombolytics, time to administer antibiotics for meningitis patients, and the amount of time patients spend in the ED. Incidentally, it is Dr. Wolff who wrote the (DBase III) program to generate the "Emerson Hospital Emergency Department Monthly Census Reports." He also developed and analyzed a patient satisfaction questionnaire for Emerson. It was used for a period of about two months before they realized that there was a ceiling effect and thus no practical information being offered through its use. Finally, Dr. Wolff suggested that we also try to measure staff attitude to patients. Interesting idea.

27 January 1994

MEMORANDUM FOR RECORD

Subject: Notes from Site Visit at Emerson Hospital on January 27, 1994

1. Robert Simon and John Morey observed in the ED at Emerson Hospital from 1:15 to 9:00 PM. Robert shadowed two attending physicians and John shadowed one charge nurse and observed operations within the main room. Another physician was on duty overlapping the day and evening shifts.

Contact personnel:

Dr. Todd Pritz - Attending physician day shift
Dr. Margaret Dozark - Attending physician evening shift
Ms. Mary Lou Cunningham - Charge nurse evening shift.

2. Observations

a. With the exception of about a hour around 5PM, the ED was moderately to extremely busy with a large number of seriously ill or injured patients arriving both by ambulance and through the triage desk. We had not observed the ED at this level of activity during previous visits.

b. Communication problems surrounded the dissemination of information on incoming ambulance patients. In one instance Sue Koerper, the ED Nurse Manager, took an ALS call that they were bringing in a cardiac patient from the Massachusetts Correctional Institution. She did not inform the charge nurse. A few minutes later a security guard in the ED mentioned it to the charge nurse. Sue overheard this conversation, and confirmed the report of the incoming patient. Not only did the situation require planning for a monitored cardiac bed, but the arrival of a prisoner created a number of potential administrative issues that the charge nurse might have to deal with. In another instance, a phone call from a doctor's office informed the ED of the intent to send a patient in by ambulance. A few minutes later radio contact with an ambulance confirmed the imminent arrival of a patient. The ED staffer answering the call thought this was the direct admit that was telephoned in earlier. Three or four ED personnel in the nurses station then became engaged in a discussion of whether or not the phone call and EMS radio message referred to the same patient. Written records of these incoming calls apparently were made (the ED has forms for this), but neither the forms (or a whiteboard display) of these two messages were used to sort out the facts. In all, about six ambulance notifications were noted that required (a) announcement that an ambulance patient was arriving and (b) a bed assignment so that the staff could deal with the arrival.

c. A nurse came by the nurses station and asked no one in particular, "Has anyone gotten in touch with Dr. Blute?" A number of calls had been made trying to reach him. Twenty minutes before the nurse asked the question, Dr. Blute had returned the call and talked with an ED attending.

d. A nurse who was tending a patient in the Trauma Room came out and, concerned about the two other patients she was caring for, asked, "Where's my girl in 2?" The charge nurse answered that question as the nurse looked for the chart missing from its rack location. The nurse then looked in the chart rack and determined the status of her other patient. Similarly, two nurses asked one another about the status of patients in the Main Room. One gave a rundown to the other. This status update question is often asked, given the existing chart-rack system in the ED. The chart rack does not signal status changes, and charts are either temporarily displaced or placed elsewhere to signal a nurse's "To Do."

e. The evening charge nurse did not receive report from the outgoing charge nurse because she stepped in to help do a lumbar puncture on an infant. Only two evening nurses received report. Transition problems also were apparent as physicians asked questions like "Who's taking care of Maureen's patient" once the day shift nurses had departed.

f. A physician told the ED Coordinator (secretary) to put a chart that was in a numbered bed slot into the "To Be Seen by MD" bin. The Coordinator told the MD she thought that if labs had been drawn, that these orders had come from a physician. He told her this was not necessarily the case. This was an unusual lapse in procedural knowledge for this individual, who has been working in the ED for at least 15 years. During the course of this site visit, the impressive capabilities of this individual in hearing, relaying, and processing information were noted. She is facile with the computer patient registration/lab ordering system, places and receives phone calls with ease, is familiar with medical terminology, and apparently maintains her own administrative situational awareness. This individual, and others like her in other EDs, is indispensable to the operation of the department. These coordinators are perhaps the single most important ancillary personnel for ED team operations. Their situational awareness is of equal importance to that of the charge nurse. An interesting question is how it can be used to improve all staff situational awareness.

g. A series of recurring confusions percolated through the staff as a patient from Bed 8 was transferred to Bed 7, and Bed 7 was transferred to Bed 9. Bed 8 had to be opened up to receive an incoming ambulance patient. Not everyone was clear that a change had been made, or where the patients ultimately were relocated. So as patient care actions needed to take place, or questions like "Have the labs come back on Bed 8 yet?" arose, the identity of the actual patient in question remained ambiguous. Again, no status reporting system picked up these changes.

h. Some nurses, and infrequently the attending physicians, do not establish that they are the primary care giver for a patient. More importantly, the RN generally does not tell the patient that she is the primary nurse. This problem is less pronounced for physicians, but in one instance we observed that a physician started to do the history and physical on a patient who had already been seen by another physician. The patient informed the second physician of this fact. If a nurse tells a patient that she is the primary nurse, the patient and family could ask for her by name. In addition, the patient could tell other staff who the primary care-givers are if the need arose.

i. A patient with a rapid heart beat showed Dr. Pritz's style of gaining control of the situation. While dictating a record, Dr. Pritz was called by one of the nurses to come stabilize a patient. He immediately responded. The patient had a rapid heart beat (about 150-160) that would not "convert." Upon his arrival, the patient was agitated and the nurse was obviously anxious to get started on the treatment. An IV line had already been established and within a minute of his arrival, she was shaking the vial of medicine as if to say "Now? Let's get started!" Dr. Pritz remained unruffled and asked her to wait. Then over the next few minutes Dr. Pritz spoke calmly and sympathetically to the patient. After gaining control of the situation, he explained how the medicine (Adenosine) would work, that it was very powerful and would probably convert him within about 20-30 seconds. He explained the side effects such as tightening of the chest, feeling flush, potential dizziness, etc. When he established all of this, calmed the patient, and had the patient's complete attention, he then ordered the nurse to administer the Adenosine. The patient converted. This situation was handled very well by Dr. Pritz. As an observer, the impression is that he could have handled it even better by taking a moment to explain to the RN why he had delayed treatment and how important it was when administering medicine with powerful physical reactions to have the patient calm and focused.

j. At one point, Dr. Pritz needed to do an internal exam of a psych patient. He walked out and asked two nurses if one could help. It turned out that one of the nurses was the charge nurse, but Dr. Pritz apparently didn't know this nor did he seem to know [redacted] was the primary nurse for the patient. This is typical at Emerson.

k. Wh[redacted] Dozark came on duty at 3PM, she made no attempt to determine who the char[redacted]se was or what nursing staff was working the shift. Nor did she receive a hand-off from Dr. Pritz, or otherwise become aware of the caseload in the ED. She simply picked up a chart and went to examine her first patient. Thus Dr. Dozark had a complete lack of situation awareness.

l. Dr. Dozark attempts to get some background on a patient before she does her initial examination. She looks at the nurses notes, gets information from EMTs

and paramedics, and in some instances does a brief review of old charts. She clearly capitalizes on the RN's notes.

m. Dr. Dozark is very business like in her approach to caring; perhaps a better term is "production-oriented." For a typical patient, she (1) picks up and reads the patient chart, (2) does a history and physical (H+P), (3) diagnoses and treats, (4) writes discharge instructions and dictates the chart, (5) leaves instructions for the RN such as crutches, neck brace, bandage/dress, etc. ...Next... She is very productive. She is also unequivocal in her diagnoses.

One very interesting technique she uses during the history-taking: At the end of all her questions, she asks the patient if there is anything else they would like to say. She is earnest about this question and allows 10-15 seconds, a rather long time, for the patient to answer. In many cases, there is valuable additional information obtained by giving the patient a little time to reflect on what else the doctor needs to know

n. Two nurses, Mary and Stephanie, did some preliminary planning on the care of an incoming ambulance patient who had been hit by a car. However, they did not involve Dr. Dozark in the planning.

3. Impressions

a. The evening charge nurse spent a significant part of the shift caring for patients. She told us that she does so when it gets busy. She is kept informed of the status of the department as other nurses update her on the status of their individual patients. We need to determine whether charge nurses take a predominantly administrative or clinical focus as their departments get busy, and what the implications of their focus are. Given the number of instances we observed where ED personnel needed some guidance or status report from "someone in charge," the value of the charge nurse providing a "command presence" appears as an important characteristic of that position.

b. The [redacted] during busy periods when people seemed to become flustered. [redacted] to come from the lack of situation awareness. In these instances, [redacted] member is tempted to go it alone to implement a procedure, [redacted] ever.

c. Dr. Dozark indicated that she was against our observation/shadowing because she viewed it as an intrusion into patient privacy. RS offered to excuse her, but she said that she felt pressure from Dr. Woodward to participate and insisted that RS stay with her. Nevertheless Dr. Dozark specifically asked that she be included among those who are given structured interviews. She said that she has a lot to say about communication in the ED.

24 September 1993

MEMORANDUM FOR RECORD

SUBJECT: TREAT-EM Weekly Teleconference

PARTICIPANTS: Robert Simon
John Morey
Gary Grubb
Dennis Leedom

1. The need to define teams and the identification of the basic team-related problems facing emergency departments were the two themes of this teleconference. Each theme is summarized below.

2. The need to define team for the purposes of this research has become necessary in order to (a) identify the behavioral unit of our observations and training, (b) design subjective and objective measures, and (c) focus on the unique requirements for emergency medicine team training. The discussion of team definition was put on hold in order to explore a strategy for identifying the problems the research will address.

3. Identifying team-related problems should involve a systems approach. Some of the elements of the potential problem areas were discussed.

a. The medicine-surgery dichotomy affects treatment approaches, and in a few of the hospital sites surveyed, the organization of the ED. Misdiagnosis and other medical misadventures may stem from failures to resolve conflicting approaches for some patients. The ED triage process may be affected by decision rules traceable to this dichotomy. Our research should address this dichotomy and its relationship to triage.

b. The medicine-surgery dichotomy may also affect the forming of teams in EDs that use consultants or house officers to evaluate ED patients. The UT-Bexar County ED appears to have *de facto* teams composed of medicine and surgery consultants, in addition to the ED staff, that don't appear well coordinated.

c. The idea to form teams within the participating EDs was raised as the means to focus our observation and treatment efforts. The teaming concept would allow us to capitalize on our aviation teamwork research and also aid in drawing boundaries between "core" teams and non-team members called in to assist in the core team's mission (e.g., physician specialists, medical technicians). A good starting point would use existing teaming arrangements already in place (e.g., resuscitation).

d. Forming teams without understanding the organizational characteristics of each participating hospital might be premature. As one of the objectives of Phase I we need to identify a set of ED organizational models. For instance, ED performance may be affected by matrix management that creates conflicting allegiances for a staff member between his or her parent department and the ED. Other organizational factors should be identified. Differentiating the organizational models also would aid in identifying or classifying risk and error patterns. Subsequently, these models would guide the formation of site-appropriate teams with linkages to identified error patterns.

e. Team structures might be based on the hospital's rating as a Level I, II, or III Trauma Center. In addition, teams based on different organizational structures across the sites might reveal different functional patterns in the basic qualities .

f. A general outline for the structured interviews was offered. Information would be generated by asking the staff member to provide personal examples of inappropriate or risky treatments observed for each of the malpractice high risk areas. For each of the examples offered, why the errors occurred would be systematically explored using the basic qualities as probes.

g. One additional basic quality that may need to be created for medical teams is "Documentation."

30 September 1993

MEMORANDUM FOR RECORD

SUBJECT: Medical Teams Weekly Teleconference

PARTICIPANTS: Robert Simon
John Morey
Gary Grubb
Dennis Leedom

1. Discussed implications of information technology in EDs. Noted Framingham-Union's use of PC-based systems to (a) log and track patient status in the ED and (b) create a patient record using voice-recognition technology combined with a MACEP protocol authoring system. Implications of the use of technology discussed were

a. Personal digital assistants (PDAs) might be a technology solution to aid in team coordination and information exchange.

b. Technology may help ED personnel develop common mental models and use standardized language. The form of the technology is probably not as important as the fact of its use.

2. Communication and cooperative interaction may be considered on a synchronous-asynchronous scale. Aviation crews probably function at the synchronous end of the scale (e.g., many tasks in parallel) whereas battalion staffs perform many tasks in sequence with varying degrees of temporal overlap. ED teams may be analyzed along the same scale: resuscitation teams may perform synchronously while routine ED missions may be performed asynchronously.

3. The roles and norms for ED personnel needs to be a focus of our investigation. We have to determine whether individuals consider themselves team members, and whether the institution promotes team building and team structure in the ED. Brooke Army Medical Center appears to have the best integrated team approach, while UT-San Antonio appears to have the poorest team integration seen so far (i.e., many self-interested groups operating together to provide services). The economic interests in the physicians may be a factor in team functioning, and a status issue may be an impediment to the use of nursing assistants, physician's assistants, and nurse practioners. Institutional climate, organizational structures, and economic interests may be implicated in this issue. Medical teams, as is the case with other teams, have to have reasons to be a team. What factors promote and inhibit teamness in our participating hospitals?

4. The DSM-III model for categorizing mental disorders may provide an analytical structure for the needs assessment phase of the medical team research. In looking at the error patterns, misdiagnoses, and error chains in emergency medicine, the five axis approach of the DSM-III may be helpful. Axis I would provide a means for organizing the here and how problems in the ED (including malpractice data). Axis II would provide for recognition of procedural failures and the role of information management systems. Axis III would represent the longstanding professional and organizational traditions and beliefs that hinder team building and institutional change. The DSM model also offers a model for understanding individual problems as being a part of a syndrome. A syndrome would be analogous to the recurrent problems in Army aviation that formed the basis for the training program.

5. The physicians interviewed in the Northeastern hospitals appear to agree that closed case malpractice data is insufficient for understanding team-related errors. We need to develop different dimensions of inquiry to understand team errors. For instance, misdiagnosis may be due to errors in (a) failing to properly refer, (b) failing to obtain essential information from others (e.g., patient's personal physician), or (c) the ED physician's failure to understand the limitations of his own knowledge.

6. The direction of the second year of research will probably be determined by arrangements with customers other than the Army's Health Services Command. Since ARI's funding is determined by the applicability of its research to battlefield missions, second year products need to be aimed at (a) battlefield medical units and personnel and (b) the opportunity for technology applications to solve disfunctions in team operations. The first year needs assessment is essential for understanding the problem areas. This stage precedes training and technology interventions which can be supported by funding from the Health Services Command and the Army Medical Research and Development Commands, respectively. The possibility for cooperative research and development agreements between the Army and civilian organizations (e.g., American College of Emergency Physicians) may provide an additional means of support.

15 October 1993

MEMORANDUM FOR RECORD

SUBJECT: Medical Teams Weekly Teleconference

PARTICIPANTS: Robert Simon
John Morey
Gary Grubb
Dennis Leedom

1. Dr. Leedom reported that the MOAs had been signed by Dr. Johnson and forwarded to the Health Services Command for signature. Dr. Leedom will poll the hospitals next week on the status of their approvals. He also noted that he had sent a letter to Dr. (PhD) Colin Rorey at ACEP describing the Army's Cooperative R&D Program. Dr. Leedom obtained a model copy of such an agreement used by AMC. The document is about 20 pages of legalese. These agreements do not involve the exchange of money between the signatories.

2. Dr. Leedom also reported obtaining points of contact for expanding the focus of our research into combat medical units. Two promising POCs are Col. Dice of the 5th MASH, 44th Medical Brigade and Dr. Matt Rice at Madigan Army Hospital (Tacoma). Both are regarded by LTC Caldwell (Health Services Command) as top emergency medicine physicians in the Army. Observations in MASH units should be planned.

3. Gary Grubb has obtained an organizational chart listing potential contacts in the Force Integration, DES, and Combat Developments Directorates at Ft. Sam Houston. Will distribute copies and check on availability of the original chart from AUSA..

4. ED observation visits have not been scheduled pending the approval of the MOAs. Dr. Yeh indicated it was OK to start observing at Newton-Wellesley without the MOA.

5. Discussions continued on frameworks for organizing our observations and measures. Dr. Leedom suggested use of the AMA guidelines for levels of trauma centers to aid in defining missions and measures appropriate for the levels of facilities under observation. These could be integrated into the quality improvement program measures already in use at these facilities. The level of trauma center could be crossed with factors such as the level of seriousness of presenting cases or through-put rates (i.e., time it takes to reach a definitive diagnosis or discharge the patient either home or admit to the hospital). This type of data would be related to measures of team functioning.

6. The crew coordination model appears applicable to ED teams, but needs to be reviewed with respect to ED operations. For instance, planning may occur at two levels. One may be departmental planning meetings held at regular intervals. Planning also occurs in real-time to meet individual and overall caseload demands. The usefulness of the crew coordination model in understanding cockpit teamwork suggests using the same or a modified model during the development of the ED research methodology.

22 October 1993

MEMORANDUM FOR RECORD

SUBJECT: Medical Teams Weekly Teleconference

PARTICIPANTS: Robert Simon
John Morey
Gary Grubb
Dennis Leedom

1. Discussed at length an on-site visit at Newton-Wellsley Hospital ED by Robert Simon (who shadowed the charge nurse) and John Morey (who shadowed the attending physician). Notable patient episodes included a AMA patient with a suspected psychosomatic disorder, an inebriated patient involved in an auto accident, and a psychiatric patient. Suspected errors chains or lack of timely care was discussed. The important gate-keeping and care-giving roles of the nurses were discussed. Using two observers to shadow the charge nurse and the ED physician provided a valuable perspective on ED activities.

2. Dr. Leedom discussed the team-building model presented in a bibliography article by Lowe and Hallonen. Their model could be used to assess via questionnaire the degree of teamness in ED staff. Another article by Nason described team conflict as a measure of institutional and patient care dynamics.

3. Dr. Leedom provided information on a software package called Iliad which is a medical expert system used to aid in diagnosis, provide tutorials, or present self-administered tests (among other functions). The software might prove useful in understanding physicians decision-making processes. He will obtain more information on the software.

8 November 1993

MEMORANDUM FOR RECORD

SUBJECT: Medical Teams Weekly Teleconference

PARTICIPANTS: Robert Simon
John Morey
Gary Grubb
Dennis Leedom

1. Discussed Dr. Leedom's memo on his visit to Dr.Steiger at Lyster Army Community Hospital. Framing the discussion with Dr. Steiger using team coordination terms demonstrated that many ED issues can be considered from the team perspective. The research team should continue using team coordination dimensions in future writing and discussion. Dr. Steiger's comments on ED operations reinforces some observations made during on-site ED visits (e.g., staff relationship to patients during shift changes). Dr. Leedom noted he will attend a future QA meeting at Lyster. We agreed that attending morbidity and mortality or QA conferences at our participating hospitals would be very valuable .

2. Reviewed in detail the incident at Newton-Wellesley involving the young women presenting with numbness and weakness on her left side (the "Linda Lucid" incident). Used this example to examine the use of the error chain concept to identify points at which team coordination might avoid undesirable consequences. In this example entertaining an early probable diagnosis of a psychosomatic disorder appeared to interfere with the patient's treatment team taking serious steps to rule out a physical problem. Looking for error chains during shift changes when departing staff appear to be "disassociating" from patients may be especially useful. Noted the common observation made during on-site visits that ED physicians and staff nurses have separate hand-off reports during shift changes. Need to look at error consequences of this practice.

3. Dr. Leedom raised the issue of using FIRO-B or other instruments to establish styles of interpersonal relationships among ED staff. We might look specifically for gender differences among ED physicians.

4. Discussed briefly the potential problem of having DRC's ED SME (SMEED?) teaching ED physicians. Raised the possibility of having an MD involved in platform instruction.

15 November 1993

MEMORANDUM FOR RECORD

SUBJECT: Medical Teams Weekly Teleconference

PARTICIPANTS: Robert Simon
John Morey
Dennis Leedom

1. The draft Observations Checklist Outline was discussed. The checklist will provide basic descriptive data on each of the hospital sites used in the study. In addition, each observation visit will have a record of basic descriptive data on the ED activities for that particular shift. These preliminary Phase 1 observations will help to build the formal data gathering instruments--structured interview, team observation instruments, and performance measures--subsequent to the current period of initial familiarization with the sites.

2. In general, behavioral observation scales should reflect theories of staff development as discussed in prior teleconferences. In addition, ideas concerning risk behavior and decision biases, such as those contained in a book by Hale and Glendon, may be useful in determining events in error chains. Dr. Leedom is sending DRC extracts from the Hale and Glendon book. Literature obtained to date should be reviewed for similar expressions of error-related behaviors.

3. Patient load appears as an important descriptive characteristic of the ED. Measures of patient load should incorporate some form of patient severity index. Since we're currently in a preliminary data gathering mode, a simple index (e.g., such as the four point index of emergent, urgent, delayed/routine, and untriaged) is sufficient for now. However, a more complete or sensitive index may be required during the formal data gathering. Signal detection theory could offer a technique for capturing the dynamics of detecting and not-detecting a significant medical event from the overall activity level of the ED.

4. Misdiagnosis data are most appropriately gathered during Phase II. During Phase I, however, it would be useful to determine whether feedback is provided to ED physicians on the correctness of their diagnoses for admitted patients. One of DRC's nurse-educator candidates revealed that the candidate's hospital has no system for providing this form of feedback. ACEP guidelines do not mandate that ED physicians make definitive diagnoses. However, whether the ED diagnosis is correct (or some measure of degree of correctness) appears a useful index of ED performance. This measure would provide an additional perspective to that of misdiagnosis.

5. The staff relationships with patients items of the checklist is expected to grow considerably as we continue the site visits. The basic qualities observations requires a determination of the "team" being observed. Robert Simon has suggested that sampling a number of primary care work groups (a nurse-MD dyad, at the least) during a given shift could provide a general rating of the team characteristics of that shift. Dr. Leedom suggested that observing nurses or doctors exclusively for a shift might offer the same picture. John Morey indicated the value of a pair of observers shadowing a primary care team to provide two perspectives on care for a given patient.

6. Discussions of individual measurement issues always need to return to the overall measurement objective of the project. That is, we need to make connections between the incidents of team errors and overall ED performance.

7. Gary Grubb was unavailable for this week's teleconference, but will return next week.

22 November 1993

MEMORANDUM FOR RECORD

SUBJECT: Medical Teams Weekly Teleconference

PARTICIPANTS: Robert Simon
John Morey
Dennis Leedom
Gary Grubb

1. Discussed Robert Simon and John Morey's site visit at Metro-West (Framingham-Union) Hospital. Noted was the distinct evidence of good teamwork and interpersonal warmth among the ED staff. Described the computer-based patient information system. Notes on this visit will be provided in a separate memorandum.

2. Dual history taking by ED nurses and physicians was discussed with the charge nurse and an attending physician at Metro-West. They indicated that history taking by the nurse is used to "get things started"; that is, the nurse is authorized to order lab tests or set up for treatments based on the patient's presenting symptoms and history. The physician subsequently devotes more time to talking with the patient and taking a history. Taking another history can flesh out further details and check for consistency. This issue was not pursued in greater detail during our suppertime conversation, but it appears not enough exchange of information occurs between the nurse and MD with respect to history-taking.

3. ED physicians do not receive, and rarely pursue, information on the correctness of their diagnosis on admitted patients.

4. "Variance Reports" are prepared at Metro-West for certain medical situations (e.g., treatment of a rape victim), AMAs, patient accidents, and any other incidents that are out of the ordinary. This appears to be a potentially useful data source for our research. We'll pursue it with Metro-West and determine if similar reports are done at the other hospitals.

5. Dr. Leedom indicated that the extracts from *Individual Behavior in the Control of Danger* was provided as general background. The risk behavior, decision bias, and tolerance for ambiguity findings (among others) can provide potentially relevant ideas and issues for observations and the formal survey instruments. The "Specific Questions or Assessments" section is intended to relate the general findings in the book to the specific interests of our research.

6. Workload management/prioritization may need to be looked at from the perspective of leadership. There are probably dynamic and procedural aspects that need to be differentiated as we compare various ED departments.

7. Conflict resolution was discussed as an area that we do not intend to integrate into our training. Our research will focus on team-oriented behavioral and procedural aspects. Conflict-related *behaviors* are appropriately a concern only as they relate to error patterns.

1 December 1993

MEMORANDUM FOR RECORD

SUBJECT: Medical Teams Weekly Teleconference

PARTICIPANTS: Robert Simon
John Morey
Dennis Leedom
Gary Grubb

1. Discussed Robert Simon and John Morey's site visit at Metro-West Hospital. Notes on this visit have been provided in a separate memorandum. Points of discussion were as follows:

a. The charge nurse's making arrangements for a psychiatric patient whose arrival occurred at the shift change

b. The capacity of the evening charge nurse to task switch so effectively

c. The observation that in an organization that values teamwork so highly, so little information is passed between the MDs and nurses

d. An error chain noted on the elderly woman with severe leg pain (described in site visit notes)

e. Win-Win as a communication technique for our training program

2. Dr. Leedom discussed his contact with Dr. Bogner at the FDA. Dr. Bogner is interested in MANPRINT applications to emergency medicine. Robert Simon pointed out the limitations of MANPRINT in medicine: there is no system integrator as there is for military systems. The Army may be a good place to try a pilot study of applying MANPRINT, such as development of a mobile OR or resuscitation system.

3. Dr. Leedom passed along information on three malpractice/medical misadventure articles obtained from Dr. Bogner. He will provide copies of the faxed articles. DRC will obtain better copies through interlibrary loan. The types of errors noted in the articles were discussed. Types of errors seen in ORs and EDs may be the same, but the contributing factors may be different in EDs having a surgical versus a medical, versus an emergency medicine orientation.

4. Dr. Leedom noted The Harvard Medical Practice Study which is the data source for one or more articles in paragraph 3. One important observation is that negligence on the part of physicians appears as a consistent percentage of errors across medical specialties.

5. Robert Simon indicated he has obtained a demonstration tape from one medical video production company, and has information from a second.

6. We noted the activation of MEDCOM in October. MEDCOM has a strategic planning mission, and has taken over some of the functions of the Army's Surgeon General's Office. Dr. Leedom said he would find out if the reorganization had any meaning to our project.

10 December 1993

MEMORANDUM FOR RECORD

SUBJECT: Medical Teams Weekly Teleconference

PARTICIPANTS: Robert Simon
John Morey
Dennis Leedom
Gary Grubb

1. Discussed Robert Simon and John Morey's site visit at Emerson Hospital. Notes on this visit have been provided in a separate memorandum. Points of discussion were as follows:

a. The ED is under renovation and operations have been disrupted. The acute/non-acute differentiation of the department has been suspended during the renovation. This fact may be affecting staff operations.

b. There is a distinct lack of effective communication between the nurses and physicians, no shared vision of patient status, and no air of professionalism among the nursing staff.

c. Because the ED is a small department, our presence for observations may be having a greater impact on staff operations than they do at larger departments.

2. Dr. Leedom commented on our observations about the nursing staff. He hypothesized that the higher the level of professional training, or the view of itself as composed of professionals, the better a group performs as a team. Emerson may be an example of a group that is lower in ED professional training or self-perceived professionalism. This issue should be included in our survey of ED teams.

3. Dr. Leedom will provide DRC a selected bibliography from a nurse's master thesis on professional attainment in nursing based on educational level. We should obtain these articles.

4. Given our experience in the Emerson Hospital ED, the issue of leadership emerges as a potential area for observations or data gathering during the project.

17 December 1993

MEMORANDUM FOR RECORD

SUBJECT: Medical Teams Weekly Teleconference

PARTICIPANTS: Robert Simon
John Morey
Dennis Leedom
Gary Grubb

1. Discussed Robert Simon and John Morey's second site visit at Emerson Hospital. Notes on this visit are provided in a separate memorandum. Points of discussion were as follows:

a. The Emerson ED seems more family oriented. For example, chairs are available close to each patient bed for family or friends accompanying the patient.

b. Staffing of resuscitations was reviewed at Emerson and other hospitals.

c. Staff subconscious reactions to patients was discussed. One subconscious response is the patient's socioeconomic status, including a paying vs. a nonpaying patient. Another is the stereotyping of the patient with respect to his presenting complaint. We might reveal these subconscious categorizations during the structured interviews. We have not observed direct evidence of differentiation of care at the behavioral level.

d. Lack of effective communication and information management was again noted at the Emerson ED.

2. Dr. Leedom pointed out a TQM value that we should consider for our team training. That value is that anyone with whom a ED staff member interacts should be considered as a customer. Treating a patient as a customer results in a happier and more cooperative patient. MDs and RNs respond better to cooperative patients, in our experience.

3. Cross-monitoring was discussed. Our experience is that only one MD is responsible for treating a patient. The MDs frequently ask advice of other MDs, but only relinquish responsibility for that patient in a formal way (e.g., admit to a service, call in a specialist to the ED). This discussion raised an issue that we need to pursue: What factors promote cross-monitoring, and what factors degrade cross-monitoring. An exercise for our training course could be built around this issue.

4. In discussing Emerson ED's approach to staffing resuscitations, an important observation across all our hospitals would be how the staff adjusts to covering other patients when selected personnel go to staff a resuscitation.

5. Dr. Leedom will provide a notebook of material on anesthesia errors from his visit this week with the FDA.

6. Robert Simon discussed the qualifications, skills, and personal qualities of Anne Locke and Lori Hughes. The hiring process is progressing, but start date will be delayed pending the arrival of Delivery Order #8.

30 December 1993

MEMORANDUM FOR RECORD

SUBJECT: Medical Teams Weekly Teleconference

PARTICIPANTS: Robert Simon
John Morey
Dennis Leedom
Gary Grubb

1. Discussed Robert Simon and John Morey's third and fourth site visits at Emerson Hospital. Notes on this visit are provided in separate memoranda. Points of discussion were as follows:

a. Emergent situations, such as suspected heart attacks, show fluidity of patient care activities. Other, less acute situations reveal the lack of well-developed teamwork.

b. Despite the evening shift's good collegial relationships, the Emerson ED has systemic problems in coordinating activities and directing the actions of physicians and nurses.

c. Vertical differentiation may be a useful dimension to characterize differences between EDs. EDs with significant vertical differentiation will reveal strong dominance or hierarchical differentiation of roles. EDs with less vertical differentiation will show less hierarchial structure or "flat" organization with decision-making and leadership shared across physicians and nurses.

2. Leadership and personality have emerged as possible areas for investigation. A recent NPR commentary on coaching styles suggests that a leader's self-assurance, self confidence and willingness to express one's self are more important factors than his or her's interpersonal style (e.g., autocratic-democratic). Difficulties MDs have with relinquishing their position of power is revealed in another NPR report concerning mediation of malpractice suits. Physicians are apparently very uncomfortable in mediation settings because they are equal in status to the patient filing the complaint.

3. We need to pay special attention to situational leadership as an observational issue and ultimately as a teaching point. We need to look for patterns where leadership is appropriately assumed by either the RN or MD. These need to be documented and perhaps developed as vignettes.

4. Drs. Wolff and Pritz at Emerson Hospital offered ideas on measures of ED performance. Dr. Wolff has suggested staff attitudes as an outcome measure in addition to measures of time to treat or discharge/admit.

5. A subtheme for the team training program will be a "patient-centered" or "customer-oriented" point of view for ED staff. Improving patient comfort and sense of being well-cared for will improve patient attitude and the staff's job satisfaction. Happier patients are easier to care for which facilitates team functioning.

6. An IPR in late January or early February will help to consolidate and organize ideas generated by the site visits and teleconferences. It is suggested that the IPR take place when Dr. Leedom visits Boston to observe at the Boston area hospitals. Also, by that time our new staff members will be working on the project.

7 January 1994

MEMORANDUM FOR RECORD

SUBJECT: Medical Teams Weekly Teleconference

PARTICIPANTS: Robert Simon
John Morey
Dennis Leedom
Gary Grubb

1. Discussed Robert Simon and John Morey's third site visit at MetroWest Hospital. Notes on this visit are provided in a separate memorandum. Points of discussion were as follows:

a. The charge nurses have a sense of the resources available in the ED and elsewhere, and are especially sensitive to the impact of workload on resources. The attending physicians are not sensitive to resource impacts of increasing workload.

b. Problems with information exchange between nurses and physicians continue to be apparent. For example, the attending physician did not inform a heart patient's primary nurse that admission was indicated and ordered, based on medical history more than the patient's presenting symptoms.

c. The segregation of nurses' notes from the physician's history and physical on the ED chart appears to contribute to a lack of exchange of information.

2. With regard to workload and resources, Dr. Leedom described the Parable of the Spindle. The parable describes the absence of awareness of the workload affecting all segments of a work group unless some form of work backlog is provided. Workload awareness provided by some set of indicators increases situational awareness and reduces interpersonal stress. The spindle example also shows how a systems solution reduced interpersonal stress.

3. This site visit at MetroWest provided observations of both high and low workload periods. Based on the descriptions of the site visit, Gary Grubb observed that the first performance indicators of increasing workload appear to be (a) reduced situational awareness and (b) reductions in information or assistance offered and information or assistance requested.

4. Gary Grubb's hypothesis is that a transition to higher workload may not be accompanied by a transition from "I can do it" appropriate to low workload to the team behaviors required under high workload conditions. This implies that low workload

periods do not require intensive team behaviors. A training implication is that ED teams need to be trained to transition to high workload team behaviors.

5. Teleconference participants will review the site visit notes and distill the observations made to date. The issues emerging from these observations will be discussed during the next teleconference.

14 January 1994

MEMORANDUM FOR RECORD

SUBJECT: Medical Teams Weekly Teleconference

PARTICIPANTS: Robert Simon
John Morey
Dennis Leedom
Gary Grubb

1. Dr. Leedom indicated that the MOAs for Southeast Alabama Medical Center, the University of Alabama at Birmingham, and Bexar County Hospital are still in the works. As soon as suitable arrangements are made, Gary Grubb should begin to make ED observations.

2. Dr. Simon briefly described the discussion with Mr. Evangelista, quality assurance officer for the ED physicians group at MetroWest Hospital. He explained the kinds of data normally collected on ED visits and patient satisfaction. He pledged cooperation with providing data for our use.

3. Discussed some of the elements of Dr. Leedom's ED issues memorandum. With respect to the BQ of situational awareness, we'll need to define for EDs what the elements of situational awareness are. For instance, is the charge nurse the only individual who has, or should have, the "big picture" of what's going on in the ED? It appears now that no one has an adequate "big picture." MDs and RNs seem to maintain situational awareness of their patients and not the entire ED.

4. A question that should appear in the structured interviews deals with operational horizons. Discussion of this issue generated hypotheses that short or long operational horizons could be maintained by either doctors or nurses. Interview data need to answer this question.

5. Another area for structured interview questioning is the level of commitment of nursing personnel to the institution and the profession. Likewise, the role identification of full-time, part-time, and per diem nurses could be explored.

6. In discussing throughput of patients in the ED, it appears a large percentage of time waiting is associated with laboratory tests and x-rays. Time-ordered to time-available figures on lab and x-ray times may to be available at MetroWest.

7. The potential value of developing the concept of transition from the informal style ("I can do it all") to the team-oriented style with shifts from low to high workload was

again emphasized.

8. In summary, DRC will use the Army aviation BQ descriptors (BARs) as the starting point for the emergency medicine BQs. However, we will need to re-write and refine the thirteen Basic Qualities and may need to add or subtract from the initial thirteen.

4 February 1994

MEMORANDUM FOR RECORD

SUBJECT: Medical Teams Weekly Teleconference

PARTICIPANTS:	Robert Simon	John Morey
	Dennis Leedom	Gary Grubb
	Lori Hughes	Ann Locke

1. Dr. Leedom indicated that the MOA with Southeast Alabama Medical Center was not approved by the hospital legal staff. He will approach Flowers Hospital in Dothan as a possible participant. The MOA with MGH was brought to the Human Subjects Review Committee in January, and action is still pending. If MGH continues to delay approving the project, Lori Hughes will make contact with the University of Massachusetts Medical Center in Worcester, a certified Level I trauma center. She believes they would be very receptive to the project.

2. Participants discussed the issue of motivating hospital staffs to take the team coordination training and applying it in their EDs. One strategy is to have ACEP and the ENA sponsor the training for continuing education credits or for certification. For example, the Massachusetts ANA requires 15 CEUs per year for licensure purposes, and 100 CEUs are required for recertification as a CEN. Discussion revolved around the advisability of making the course a recommended, rather than a required, course. If the team coordination training is implemented through the CEU or certification route, coursework performance standards and an examination will have to be developed. Dr. Leedom is willing to contact the ENA. DRC will provide contact information to Dr. Leedom for the follow-up.

3. Robert Simon proposed that we relook the Basic Qualities for the purposes of consolidating existing BQs and adding new BQs appropriate to emergency medicine. One example of a new BQ might be to provide documentation. Dr. Leedom concurred.

4. We agreed to develop a draft set of performance measures and adaptation of the Basic Qualities to the emergency medical team context. An important part of this effort is developing team-oriented target behaviors and associated performance standards. The draft will be completed by 28 February for Dr. Leedom's review and comments.

5. Lori Hughes and Ann Locke pointed out the significant operational differences between EDs in large teaching hospitals and suburban community hospitals. Although much discussion takes place in medical circles about MD and RN collaboration, not much action has occurred to implement collorabative efforts. In the teaching hospitals

it seems that the customers are primarily the residents and secondarily the patients.

6. Dr. Leedom suggested that we rename our research effort "High Intensity Medical Team Coordination." This would help to differentiate our program from other programs developed within a TQM framework, or other programs such as MIT's Dialogue which is a traditional organizational development project.

10 February 1994

MEMORANDUM FOR RECORD

SUBJECT: Medical Teams Weekly Teleconference

PARTICIPANTS:	Robert Simon	John Morey
	Dennis Leedom	Gary Grubb
	Lori Hughes	Ann Locke

1. Lori Hughes described her experiences over two days in the MGH ED. After noting impediments to operations on the first day, on the second day she carried out the following team-oriented procedures: (a) introductions of nurses and physicians, (b) nurses drawing bloods and starting IV lines to expedite diagnosis and disposition, and, (c) use of the white board to communicate staff assignments and essential information. These actions resulted in faster bed turnover and an improved interpersonal climate. Dr. Leedom commented that the situation where ED teams are formed at each shift promotes the need to standardize team behaviors.

2. Lori pointed out that MGH does not have ED nurse responsibilities formalized in a job description. On the other hand, UMASS Medical Center does and thereby delegates many clinical tasks to the nursing staff. The MGH ED promotes the physicians doing many tasks (like starting IVs) that are routinely done by nurses elsewhere. Lori indicated that if MGH ED nurses take the initiative to do these tasks, some other ED nurses will make belittling or abusive comments.

3. Lori Hughes' experiment with new team procedures provided the basis for discussions of the training package. First, an extended training program may be difficult to schedule. That is, extensive training may be counterproductive with ED personnel who respond best to brief and concise training. Secondly, an effective implementation strategy may be to introduce changes such as Lori did, to be followed by or accompanied by the coursework. Staffs might then come to the training "primed" by their perceptions of the improvements already instituted.

4. Discussions began on the draft emergency medicine basic qualities. Dr. Leedom concurred with including BQs related to quality of patient care and processes of learning and case review. He suggested retention of a planning BQ tailored toward a team forming and organizational briefing frame of reference. In addition, he suggested consolidation of BQs related to communication, cross monitoring, and sharing of decisions. Discussions will continue. Team members will draft versions of the medical BQs including rationales for each BQ and share them before the next teleconference.

5. Robert Simon suggested DRC draft a crosswalk between the proposed emergency medicine BQs and the FAA Advanced Qualification Program team dimensions and behavioral markers.

6. The next teleconference will be on 16 February 1994 at 2:30 p.m. EST.