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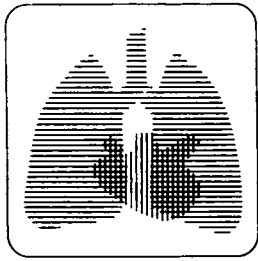
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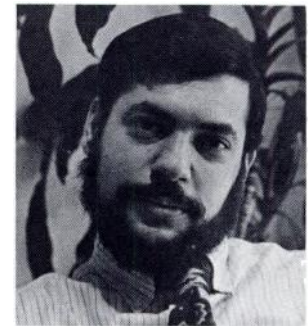


CHEST

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The Problem Oriented Record in Critical Care Medicine

Laurence B. Gardner, M.D.*



The medical record ideally should represent a careful documentation of a given patient's illness, the diagnostic and therapeutic approaches of the physician to that illness, and the day-by-day progress made in dealing with each aspect of the illness. The record should reflect the physician's thinking, and one should be able to glean from it the exact reasons for this particular test, for that particular drug and the justification for any diagnosis made during the course of the patient's illness. In addition, the medical record should serve as an ideal teaching tool, and if it met the above criteria, it most certainly would. Unfortunately, few of us can say in all honesty that our records uniformly match the above description. More commonly, the record consists of a disorganized collection of facts, comments and opinions about the case. It is source-oriented and as such, one finds x-ray reports in one section, laboratory data in another, the history and physical findings in a third, the consultants' opinions in yet another. Under such a system (really a nonsystem), aspects of the patient's illness are all too frequently ignored or forgotten, especially if they do not appear to be directly related to the problem which brought the patient to the hospital. Also, because the medical record does not conform to any given single format, medical audit of charts for accuracy, completeness and quality of care is virtually impossible.

How many times has it been possible for a

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consulting physician to pick up a source-oriented record and learn quickly about the important aspects of that patient's illness without having to contact the primary physician and talk directly to him? The medical record should serve as a clear form of communication between physicians; it should document in detail all of the patient's problems, and it should serve as a testimonial to the quality of care being delivered to that patient by the medical team in charge of his care. The conventional medical record fails frequently on all three counts.

THE PROBLEM ORIENTED MEDICAL RECORD

Weed¹ first introduced and has since popularized² the concept of the problem oriented medical record and at the same time succinctly pointed out the deficiencies of our present nonsystem of record keeping. The problem-oriented method of record keeping does not ensure excellence in medical care, but rather should be looked upon as a tool without which excellence would be terribly difficult to achieve and virtually impossible to identify.

This approach concentrates primarily upon identifying all of the patient's problems (not making diagnoses!) and dealing with these problems in a logical and orderly fashion. The problem-oriented record consists of four essential elements: the data base, problem list, detailed plans (and accompanying orders) and structured progress notes dealing with each of the identified problems (Fig 1). What follows is a somewhat detailed outline of the problem-oriented record as it is used at the Hospital of the University of Pennsylvania.

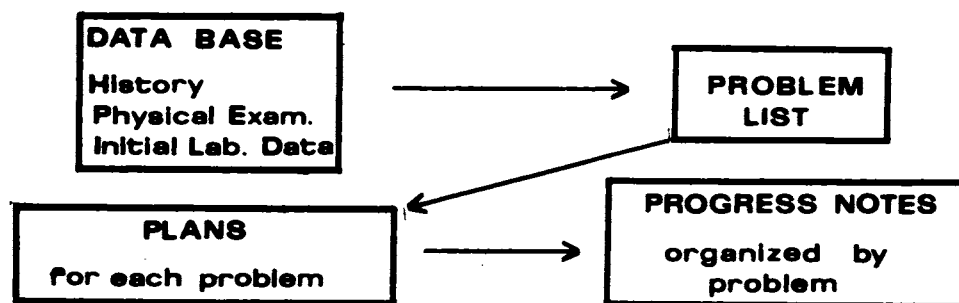


FIGURE 1. Schematic diagram of the inter-relationships between the four elements of the problem oriented record.

The data base includes the usual history and physical examination, the carefully reviewed records of all previous medical encounters, and finally, any other information pertinent to the patient's medical condition and management. Also included is a core of required laboratory data which might be defined differently for patients of different ages, sex, and potential risk factors. Pulmonary function tests might be standard on all smokers over age 40, while pap smears and mammography might be routine on young women. In addition, any laboratory studies which seem indicated in light of the patient's problems are included as well. The following format is in use at our hospital:

1. Identifying data—(standard) name, age, sex, admission number
2. Chief complaint—(standard)
3. Patient profile: a short paragraph describing the patient's life situation, daily activity, functioning role in society, etc. (Takes the place of the social history.)
4. Present illness: May take one of two forms.
 - a. Traditional chronologic statement of the events leading up to the chief complaint and admission.
 - b. Chronologic history of the patient's *clearly separate* active problems (*ie* diabetes, leukemia and rheumatoid arthritis may be considered separate problems, but epigastric pain, weight loss, and melena should not be considered separately).
5. Past medical history: may take one of two forms
 - a. Traditional
 - b. History of inactive problems (with supporting data base for each in the first problem oriented workup), plus drugs, habits, insignificant past illnesses (*eg* T&A), pertinent negatives, etc.
6. Family history (traditional)
7. Review of systems (traditional)
8. Physical examination (traditional)
9. Laboratory data including x-ray films, electrocardiogram, Gram stains, etc.
10. Summary (traditional)

From this data base is generated a series of problems resulting in the problem list. Problems may be unequivocal and established diagnoses (*eg* carcinoma of the lung), symptoms (dyspnea), abnormal laboratory values (positive stool guaiac), abnormal physical findings (hepatomegaly), socio-economic problems (inadequate income for family

size), prior surgery (status post cholecystectomy), etc. Any factor which will significantly influence the patient's medical welfare should be listed. Disease processes must be listed at the level of their present understanding; rapid diagnosis based on insufficient data is strongly discouraged. A chest x-ray film revealing intra-alveolar infiltrates may well represent pulmonary edema and left ventricular failure, but could also be due to uremia, shock lung, rapidly progressive staphylococcal pneumonia, etc. Until the supporting data are obtained, the problem should be listed as "bilateral intra-alveolar process" or some such suitable descriptive term. Once the data are in hand and, for example, the circulation time and BUN are normal and the Gram stain and culture reveal staphylococci, the diagnosis of staphylococcal pneumonia may be (and must be) listed (Fig 2). In addition, while problems which are clearly related must be listed together (hypertension, fundal hemorrhages, severe headache), problems which may be unrelated must be listed separately. Great harm can result from the assumption that the patient's systolic murmur is secondary to her collagen vascular disease, when in fact critical aortic stenosis is the cause. One never uses the term "rule out" on a problem list, but rather lists the actual finding as the problem and then proceeds to seek its etiology. Many clinicians find the use of relatively unsophisticated terms in the problem list discomforting, but clearly it is more honest and useful to list "pyuria" as just that rather than "rule out urinary tract infection" and miss the vaginal discharge when the urine culture returns as negative and the problem is forgotten. In summary then, a problem is defined at its level of understanding and can then be investigated and managed; it will not be ignored simply because it is poorly understood and of seemingly little importance.

The problem list is not a static document which, once devised, is then ignored. It is placed at the front of the record and continually modified. For example (Fig 2), on 11/15/71 the diagnosis of staphylococcal pneumonia is established, and on

Page ____ of ____

PROBLEM LIST			
Current Problems	Date		Inactive Problems
Hyperamnativitis are always active problems	First Noted	Resolved	
1	Bilateral intra-alveolar process PN 11/13/71 Staphylococcal pneumonia	11/13/71 12/10/71	Staph. Pneumonia
2	Constipation PN 12/13/71 Carcinoma Sigmoid Colon	6/71 12/13/71	
3	Weight Loss PN 12/13/71 #5	4/71 12/13/71	
4	Guaiac Positive Stool PN 12/13/71 #5	11/13/71 12/13/71	
5	Alcohol Abuse a. Neuropathy b. Nutritional cirrhosis by biopsy c. Myopathy	? 3/68 11/69 3/70	
6	Allergic to Penicillin ("Rings")	?	
7		1964	Bullet Wound Right Thigh

HOSPITAL of the UNIVERSITY of PENNSYLVANIA

FIGURE 2. A sample problem list on the hypothetical patient described in the text.

12/10/71 it becomes inactive. The notation "PN" means the justification for the diagnosis is contained in a progress note on that date. Several problems may be resolved into a single diagnosis, and the number of any one may be used thereafter as the number of the diagnosis, as shown in the example. A complicated problem with several independent features should be listed as is shown in the example of "alcohol abuse." Thereafter, notes referring to the state of the patient's liver disease will use the designation "#5B nutritional cirrhosis." General rules for keeping the problem list include the following:

1. The number of a problem may never be changed, but it can be resolved into another numbered problem, as shown.
2. No item should be deleted from the problem list, but should either be resolved or made inactive.
3. Every such change must be dated, as shown in examples.
4. The final problem list should be constructed only after review by the resident and attending physician. Until then, the list under "impression" should serve.
5. Every effort must be made to keep self-limited or minor problems from cluttering up the problem list. Creation of a temporary problem by a progress note labelled as such can deal with such self-limited problems as diuretic induced hypokalemia, drug induced diarrhea, insignificant headache, etc. Problems which "make" the problem list should be those which in most cases you think will be important to the patient's post hospital management.
6. It is the responsibility of the physician to make certain that the problem list is up to date, revised and perhaps rewritten (saving the old problem list as well) prior to discharge. If the problem list is rewritten, it should be so noted and dated.
7. Finally, it is of utmost importance that problems be listed

together as soon as an association between them is established. The error of failing to recognize the relationship between problems is just as serious as failing to recognize a problem at all.

Detailed plans for each problem constitute the third important element of the system. With a new patient, we suggest that the intern who first evaluates the patient list all the active problems under his impression with detailed plans for each. The plans should consist of three parts: a list of diagnostic possibilities (in order of probability) with the procedures required to establish or exclude each; plans for therapy; and finally, and perhaps most important, plans for patient education. Few would argue that it is in this latter area that traditional, especially hospital oriented, medical care has succeeded least. The following is an example of a detailed plan for the patient whose problem list is shown in Figure 2:

IMPRESSION AND PLAN

1. Bilateral intra-alveolar process
 - a. Dx—r/o bacterial pneumonia (likely)—sputum smear, culture, wbc, arterial gases
r/o left ventricular failure—circulation time, re-examine when stable, check neck veins, gallop, etc.
r/o "uremic lung"—BUN, creatinine, urinalysis
 - b. Rx—O₂ with humidity if Po₂ low, cover with cephalothin 8 gm qd pending cultures, hydrate sparingly with free water only, frequent vital signs; pulmonary, infectious disease consultation
 - c. Patient education—reassurance, encourage cough
2. Constipation
 - a. Dx—r/o functional disorder—exclusion
r/o ileus related to #1—exclusion
r/o obstructing lesion—when stable, barium enema
 - b. Rx—Enema
 - c. Patient education—none
3. Weight loss
 - a. Dx—r/o malnutrition (related to #5)—exclusion
r/o malignancy—work up when stable
 - b. Rx—none
 - c. Patient education—stress dietary habits, get dietician to help
4. Guaiac positive stool
 - a. Dx—r/o internal hemorrhoids—proctoscope when stable
r/o alcoholic gastritis—consider UGI, gastroscopy when stable
r/o GI malignancy—GI workup when stable
 - b. Rx—check hemoglobin and stool daily
 - c. Patient education—none
5. Alcohol abuse
 - a. Dx—check liver function tests
 - b. Rx—watch for DT's, no sedation
 - c. Patient education—try once more, ? Psychiatry consult

The fourth and final portion of the record is the progress note. Each note must be headed by the title and number of the problem to which it refers and is divided into four sections: subjective data (how the patient feels and what he complains of), objective data (what the physical examination, lab

results, x-ray films, etc. reveal) assessment (this part of the note should clearly convey to the reader what you think about this problem, its likely etiology or significance, progress or response to therapy) and plan (again divided into three parts). New problems may be added during the course of the illness and should be justified in a progress note with a new number and added to the problem list. Temporary problems, identified as TP No., may be dealt with by means of progress notes and need not be listed on the problem list. Progress notes, entered in the body of the record, should be written by all those concerned with the care of the patient (nurses, social service, dieticians, consultants, etc) and must adhere to the above format. Especially in the intensive care unit setting, observations by the nursing staff prove extremely useful and should not be relegated to a separate, remote and often ignored area of the record.

The extensive use of flow sheets greatly aids in following the patient's progress and may obviate the need for voluminous progress notes. Specialized flow sheets for various conditions (respiratory failure, renal failure, myocardial infarction, diabetic ketoacidosis, etc) should be developed by each institution and included as a permanent portion of the record after discharge.

Once such a system of record keeping is established, we can move one step further and begin to audit charts for quality of medical care. Did the physician gather a complete and accurate data base? Are all the problems identified, and if so, are they stated accurately according to the data available? Are all appropriate diagnostic possibilities being considered? Is the therapy appropriate? Are the problems being followed-up, resolved and consolidated as the workup goes along? These are but a few of the questions we can ask *once a uniform and logical system is available*. Think how difficult such an audit would be under the old nonsystem.

APPLICATION OF THE PROBLEM ORIENTED RECORD TO CRITICAL CARE MEDICINE

It should be obvious from the preceding discussion that the problem-oriented record is an ideal instrument for dealing with the critically ill patient who frequently has many life-threatening problems. The patient with acute myocardial infarction may develop hypotension, arrhythmia, A-V block, congestive heart failure, recurrent chest pain, and each of these may require radically different therapeutic approaches. Anyone wishing to follow a specific aspect of the patient's illness need only pick up the chart, scan the problem list and then glance through the progress notes, stopping only at those referring

to the particular problem he is considering. Similarly, the physician caring for the patient is forced to consider logically his plan for each problem and is much less likely to anticoagulate the acutely ill patient whose problem list indicates peptic ulcer as an active problem.

Perhaps the best way to illustrate the utility of this approach is to give an actual example from the record of a patient in the intensive care setting, describing her course from the time of admission and for the next several days.

PATIENT EXAMPLE

The patient was an extremely ill 42-year-old woman who received both aortic and mitral valve prostheses for an apparently acute febrile illness associated with marked insufficiency of both valves and who was readmitted six weeks later with fever and dyspnea. The nature of her underlying disease was never clear. (The jargon and shorthand of the house officers are left unaltered; an explanatory key is included at the end of this section.)

1/16/72 Impression and Plans

1. *Organic Heart Disease*

a. *Pancarditis*

Dx: ASTO titer, sed rate

Rx: Continue prednisone at increased level (10 mg TID)

b. *S/P Valve Replacement 12/4/71*

Dx: Cardiology consult, auscultate when rate decreases

Rx: Continue Coumadin

c. *Supraventricular Arrhythmias*

Dx: Intra-atrial electrode, cardiology consult

Rx: Try Dilantin as per cardiology. Tylenol

d. *Heart Failure*

? 2° to pulmonary infection (most likely)

? 2° to pancarditis

? 2° to valve malfunction (doubt)

? 2° to post-cardiotomy syndrome

Dx: CVP, CXR, ABG's

Rx: Lasix, Hold dig until dig toxicity ruled out

Attempt to convert arrhythmia

O₂, morphine, IPPB

2. *Fever*

? Viral URI

? Viral URI with superimposed bacterial, fungal or other opportunistic infection? (most likely)

? Endocarditis

? Bacteremia (doubt)

Dx: Blood cultures, urine culture, sputum, infectious disease consult

Rx: Tylenol for now. Rx with antibiotics if smear looks positive

3. *Pulmonary Disease*

Diffuse alveolar process 2° to

? viral pneumonia

? bacterial pneumonia (staph ?, Enterococcus, Pneumococcus)

? vasculitis or necrotizing pneumonitis (doubt)

Dx: Sputum, may need transtracheal—Repeat CXR; consider biopsy

Rx: Increased O₂ per mask, decrease CHF to reveal underlying problem if possible, ? antibiotics

4. *Oligoanuria*—urinated this AM
 ? A.T.N. (most likely)
 ? Low output 2° to CHF (doubt)
 No evidence of severe hypotension or C-V catastrophe
 Dx: "Lasix tolerance test" (doubling doses of Lasix to 500 mg) as CVP > 13 cm; Urine, Na and K
 Rx: Decrease intake, maintain BP, Lasix
5. *Steroid Therapy*
 ? needs increased steroids with stress
 ? opportunistic infection
 ? watch for bleeding tendency
6. *Anticoagulant Rx*
 Needs continued anticoagulation
 Rx: 5 mg Coumadin/day, check protimes
7. *Chronic Generalized Inflammatory Disease with Arthritis, Pancarditis*
 ? SLE
 ? Vasculitis
 ? Acute rheumatic fever
 Dx: Sed rate, ASTO
 Rx: Continue steroids for now
8. *Anxiety and Depression*
 a chronic problem made worse by her illness
 Rx: Needs much support and encouragement

1/16/72 7 PM

1. *Organic Heart Disease*
Arrhythmias
 O: As per cardiology patient given Dilantin (400 mg over ½ hr) IV with decrease in atrial rate to 150. Then noted to be in isoarrhythmic dissociation at 150. Given Pronestyl 200 mg in 2 doses over 10 minutes without response.
 About 4 PM noted to have spontaneously converted to sinus tachycardia at 140-150.
 A: Stable rhythm apparently and compatible with fever and hypoxia
 P: Watch for irritability. May need suppression. Try to keep fever down.
2. *Fever*
 S: Very lethargic but responsive
 O: Urine showed 10+ WBCs and few bacteria/HPF
 Sputum smear: large gram + cocci, usually paired; streps, neisseria, few gram neg orgs., moderate polys
 Fever 100° p tylenol at 4 PM
 A: Looking very toxic
 P: Will talk to ID re: Rx immediately. Repeating blood cultures
3. *Pulmonary Disease*
 O: ABGs are stable but very tenuous with Po₂ 85 on rebreathing mask and Pco₂ in mid 40's with marked tachypnea. Rales remain both bases with R greater than left. Sputum smear as above
 A: May begin deteriorating if she tires at all.
 P: Continue IPPB, O₂ per mask. Await Bx decision
4. *Oligoanuria*
 O: Only 10 ml urine since 4 PM
 No response to 40 mg Lasix at 2 PM, 80 mg Lasix at 4 PM, and 180 mg Lasix at 6:30 PM
 A: Desperately have to decrease pulmonary congestion to improve oxygenation and allow better view of underlying pulm disease. Do not think this is low output solely.
 P: Will go to 500 mg Lasix in attempt to get urine flow.

1/16/72 11 PM

3. *Pulmonary*

- S: Dyspnea increasing
 O: ABGs show Po₂ 92 but measured FIO₂ = 80%
 Pco₂ 45 (sl increased) with V_E = 14.2 L/min and VC = 700 ml
 A: Think we must intubate this woman for the following reasons:
 1. Patient is not coughing well and nasotracheal suction in this lady with tachycardia is not wise. She needs pulm toilet as demonstrated by her thick tenacious sputum
 2. Although Pco₂ is 45, work of breathing excessive (14.2 L/min) and I fear she will deteriorate as she physically tires
 3. FIO₂ needed to maintain her Po₂ is very high and we have little room for leeway except with PEEP
 4. VC is only 700 ml
 P: Will intubate and place on MA-1 respirator

1/17/72 12:30 AM

4. *Oligoanuria*

- O: Only 39 ml urine from 4 to 12 midnight
 Given 40, then 80, then 180 and finally 500 mg Lasix IV—the last at 10 PM
 UV 11-12 up to 10 ml and an additional 10 ml in past ½ hr.
 A: Do we dare try some volume expansion in this lady with CVP of 14 and probable pulmonary edema?
 P: May try cautious load with saline and/or additional Lasix or ethacrynic acid

3. *Pulmonary*

- O: Po₂ 106 on FIO₂ = 60! Pco₂ remains 46
 A: Better oxygenated on decreased FIO₂
 P: Will recheck in about 1 hour

1/17/72 2:30 AM

3. *Pulmonary*

- O: Started on Keflin and Gentamicin as per ID opinion
 ABGs now reveal Po₂ 91, Pco₂ 46.5
 A: Tolerable but a horrendous A—a gradient is present
 P: Stay with 60% O₂

4. *Oligoanuria*

- O: No real response to trial of volume (1 unit albumin) raising CVP to 15-16 and followed by another 300 mg dose of furosemide
 UV remains 5-10 ml/hr
 A: Looks like anuria will persist. It doesn't look like typical volume depletion at all.
 P: Will Rx like anuric ATN. May have to dialyze if A—a gradient widens much more

1/17/72 8 PM

1. *Heart Disease*

- O: Remains in sinus tachycardia. Cardiologists believe that valves are functioning well but that control of pulmonary problem is paramount.
 Digoxin level 3.3
 A: Stable heart. Was dig toxic
 P: Hold digoxin x 1-2 days then restart
 Dr.———stated she may have been on 0.25 mg bid for a while

2. *Fever*

- O: Temp decreased to 100° on Keflin and Gentamicin. Needed cooling blanket and tylenol but much less septic looking
 A: May be getting ahead or more likely, if viral she is

getting over it

P: Continue Keflin and Gentamicin as per plan
Get culture results in AM. If all negative, D/C antibiotics

3. Pulmonary Disease

S: Less dyspneic tonight. On morphine prn agitation
O: Rales at both bases remain, no rhonchi
ABGs improving after plasmaphoresis this afternoon removing 1 unit blood and returning packed cells

A: Congestion decreasing. Better oxygenation and ventilation

P: Try plasmaphoresis for additional unit. If pulm picture does not improve, will opt for lung Bx

4. Oliguria

O: Uosm and Posm equal, UV slowly increasing and is now 20 ml per hour. Electrolytes normal

A: Looks like ATN

P: Replace as little fluid as possible until UV increases

5. Steroids

S: Consensus of cardiologists and arthritis to increase steroids even more

P: 80 mg Prednisolone daily

6. Anticoagulants Rx

O: On 5,000 U heparin q 4h

P: Will reverse Coumadin with Vit K and continue with heparin while lung Bx is still being considered

1/17/72

3. Pulmonary Disease

S: No complaints

O: PO_2 increased, 104; FIO_2 40%—improvement.

A: May be failure—decreased \dot{V}/\dot{Q} —will re-evaluate for lung Bx in AM

1/18/72 10 AM

2. Fever

S: Diaphoretic and warm. No shaking chills

O: C and S results:

Blood x 6 (3 sets) no growth

Sputum many staph (coag to be done)

Urine 100,000 orgs/ml ? cocci. To be stained today

P: Will continue Keflin and repeat Gentamicin tonight, get final reports

Renal 1/18

4. Oligoanuria

S: None

O: Urine output up to 20-30 ml/hr

A: Probably had ATN now becoming more polyuric
Would watch U_{Na} and replace free water since serum Na appears to be rising

1/18/72 5:30 PM

1. Organic Heart Disease

O: Talked to family today who relate that she had gained 25-30 lbs with much ankle edema in the 2½ weeks p discharge from HUP. Her MD had to give her almost daily Thiomoran. Today heart rate 130-140 regular with occas PVCs. BP 100-110/0

Physical Exam:

Neck: No jugular venous distention

Chest: Diffuse rales largely basilar with rhonchi throughout

Abd: No liver edge

Extrem: Cool, no edema

ECG: PR 0.24 Rate 120 regular diffuse ST-T changes with little change from yesterday except PR 0.28 yesterday

Heart: Valve sounds sharp second aortic sound preserved Gr I-II/VI diastolic blow
LSB (not present (heard) before) Gr II/VI SEM at base

A: Obviously now had a history of increasing CHF. Much of her pulm problem may well be 2° to interstitial edema, she did respond to plasmaphoresis.

Does diastolic aortic murmur reflect paravalvular leak or SBE?

P: Will watch closely for change in murmur or status

2. Fever

O: Up to 102° this afternoon. Placed on cooling blanket
Bacteriology:

Initial sputum (1/16) staph coag neg (thus far)

Lukens (1/17) α -strep and Neisseria

Lukens smear today showed few polys, gram positive cocci

Urine (1/16) 100,000 orgs/ml, yeast

Urine (1/17) 100,000 orgs/ml, yeast

Blood 3 sets of 2—negative

A: No obvious source of sepsis at this point and she's had fevers (although not as spiking) previously without a source. I don't think Pneumocystis is compatible with clinical improvement or x-rays at this point

P: Will continue Keflin and Gentamicin another 24 hrs. If there is no change in murmur or if no positive cultures, will D/C

3. Pulmonary Disease

O: Put on T-piece at 11 AM today. Somewhat restless but VS remained stable and ABGs tolerable (PO_2 80-85).

About 5-6 PM she became more dyspneic and wanted to return to MA-1.

Placed on MA-1 (ABGs PO_2 79, Pco_2 36) for 20 min and now back on T-piece.

Removed an additional unit of plasma this PM with decrease in CVP from 14-9 but returned to 14. Little change in clinical status.

A: Looks like we have plateaued with improving function. May not get much better without increasing heart pumping action.

Does not look like an active bacterial pneumonia but can't R/O opportunistic infection yet. PPD—negative.

P: Repeat CXR. Try to keep on T-piece with frequent IPPB. Follow ABGs.

4. Oligoanuria

O: Strange events! UV 15-20 ml/hr this AM but decreasing to 10-15 ml/hr this evening. Spot lytes this AM Na 7, K 73! Serum lytes this AM Na 145, K 3.6, Cl 91, CO_2 24, BUN 53. Creatinine 1.6 (2.6 yesterday)!

Did not respond to Lasix 160 mg this AM.

A: May well be better explained by "shock" state with poor perfusion than by ATN.

P: Will give ethacrynic acid 50 mg now. If no response, will try Isuprel drip (per Dr. _____ suggestion) and watch pulse and B.P. carefully.

T.P. Elevated Liver Enzymes

O: LDH 1/17 3,300 and 2,200 today

SGOT/SGPT 540/825

But alk p'ase 31 (normal) and CPK 30 (normal)!

A: She appears to have acute hepatocellular dysfunction which may be explained by decreased perfusion. This adds weight to pump failure idea.

P: Will try Isuprel carefully and watch LFT.

1/19/72 5 AM

4. *Oligoanuria*

O: Urine increased to 20-40 ml/hr for 2-3 hrs \bar{p} 50 mg ethacrynic acid and we held off on Isuprel. Urine volume has slowly decreased through the night to 10 ml/hr for the last 2-3 hours. Periphery—remains cold. Body temp is now 98° pr and she has been off the cooling blanket for 3 hours. CVP remains 14 cm. Pulse rate is decreased to 110 for the first time since admission. Resp rate 28 and patient is "tired".

A: I think we might go to Isuprel here. If it picks up her cardiac output at all without causing arrhythmias we may get her to perfuse her organs.

P: Isuprel 1 gamma/min and watch. If OK increase to 2-3 mcg/min.

1/19/72

1. *Organic Heart Disease*

S: Dyspnea

O: CXR increasing pulm edema

BP 110/0

AI murmur now III/VI

UV down to 2 ml/hr

Prottime 5%

A: Believe we have pump failure with AI?

Secondary to valve leak.

P: Dr.———will operate but things look grim.

T and C x 10 units + 20 labels sent.

KEY TO ABBREVIATIONS IN THE PRECEDING SECTION

ABGs —arterial blood gases

AI —aortic insufficiency

ATN —acute tubular necrosis

Bx —biopsy

C&S —culture and sensitivity

C-V —cardiovascular

CXR —chest x-ray

D/C —discontinue

ID —infectious disease

LFT —liver function tests

LSB —left sternal border

Posm —plasma osmolality

SEM —systolic ejection murmur

U_{Na} —urine sodium

Uosm —urinary osmolality

UV —urine volume

\dot{V}_E —minute ventilation

VC —vital capacity

VS —vital signs

COMMENT

This acutely ill patient illustrates the utility of dealing with the situation problem by problem. Although the pulmonary disease almost certainly was predominantly vascular congestion, this did not become clear until more history was obtained and the patient's course was observed. The fever might well have been related to her underlying inflammatory disease, but *could* also have been due to sepsis, viral infection, etc and as such, most certainly needed to be listed as a separate problem. The same can be said for the relationship between oligoanuria and heart failure, as well as between

heart disease and inflammatory disease. What is abundantly clear is that the team caring for the patient grasped the possibilities of these interrelationships, but was successful in dealing with the problems separately.

DISCUSSION

Institution of the problem-oriented record at any medical facility, inpatient or outpatient, requires a great deal of persistence. The dividends are not always immediately apparent, especially to the members of the medical staff who must labor with what is at first an unfamiliar and somewhat cumbersome technique. The advantages become more apparent as patients are readmitted with complete problem lists, and new workups need only deal with active problems, and also as patients in intensive care settings with multiple problems become easier to manage and follow. Some of the obstacles to implementing this system have been recently reviewed by Hurst,³ who has, in addition, summarized the unique advantages of the system first proposed by Weed.⁴

Most of the advocates of this technique will freely admit that it is not the whole answer to raising the quality of care delivered in our offices, hospitals and intensive care units, but for the first time it elevates the medical record from its previous status of little more than an anecdotal diary to an instrument based on logical, rigorous principles of problem solving. Surely both the physician and the patient cannot fail to benefit from such a change.

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