

# Turning Your Clinical Cases Into Scholarly Work

Vineet Arora MD FACP

# Outline

- Why Case Reports?
- What makes a “good case”
- Art and science of diagnosis
- How to write an abstract

# Why Write Up a Case Report?

- Identify & describe
  - new diseases
  - rare diseases or presentations of disease
  - mechanisms of disease
  - Side effects of treatment
    - adverse or beneficial
- Medical education
  - Teach presentation skills



*Mural painting depicting Hippocrates & Galen, considered pioneers of the modern case history*

# History of Case Reports



Always note and record  
the unusual...

Publish it.

Place it on permanent  
record as a short,  
concise note.

Such communications  
are always of value.

— Sir William Osler

# Critics of Case Reports

- Highlighting the extremely unusual can do more harm than good
  - by emphasizing the bizarre
- Not evidence-based
- 2<sup>nd</sup> class literature
- “n of 1” experience



Case reports permit discovery of new diseases and unexpected effects (adverse or beneficial) ... they play an important role in medical education.

-Jan P. Vandembroucke, MD, PhD

# New Diseases



The NEW ENGLAND  
JOURNAL of MEDICINE

HOME

ARTICLES ▾

ISSUES ▾

SPECIALTIES & TOPICS ▾

FOR AUTHORS ▾

Keyword

This article is available to subscribers only. Sign in now if you're a subscriber.

Free Preview



PRINT



E-MAIL



DOWNLOAD  
CITATION

ORIGINAL ARTICLE [ARCHIVE](#)

## *Pneumocystis carinii* Pneumonia and Mucosal Candidiasis in Previously Healthy Homosexual Men — Evidence of a New Acquired Cellular Immunodeficiency

Michael S. Gottlieb, M.D., Robert Schroff, Ph.D., Howard M. Schanker, M.D., Joel D. Weisman, D.O., Peng Thim Fan, M.D., Robert A. Wolf, M.D., and Andrew Saxon, M.D.  
N Engl J Med 1981; 305:1425-1431 | [December 10, 1981](#)

### Abstract

Four previously healthy homosexual men contracted *Pneumocystis carinii* pneumonia, extensive mucosal candidiasis, and multiple viral infections. In three of the patients these infections followed prolonged fevers of unknown origin. In all four cytomegalovirus was recovered from secretions. Kaposi's sarcoma developed in one patient eight months after he presented with esophageal candidiasis. All patients were anergic and lymphopenic; they had no lymphocyte proliferative responses to soluble antigens, and their responses to phytohemagglutinin were markedly reduced. Monoclonal-antibody analysis of peripheral-blood T-cell subpopulations revealed virtual elimination of the Leu-3+ helper/inducer subset, an increased percentage of the Leu-2+ suppressor/cytotoxic subset, and an increased percentage of cells bearing the thymocyte-associated antigen T10. The inversion of the T helper to suppressor/cytotoxic

### MEDIA IN THIS ARTICLE

### ARTICLE ACTIVITY

127 articles have cited this article

- First cases of AIDS emerged as case reports of opportunistic infections in MSM
  - Kaposi's
  - PCP
  - Thrush

# Describing Emerging Threats

Research

## Bioterrorism-Related Inhalational Anthrax: The First 10 Cases Reported in the United States

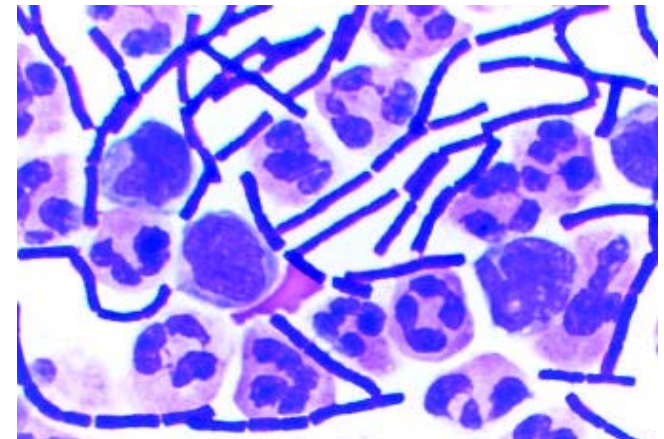
John A. Jernigan,\* David S. Stephens,\*\* David A. Ashford,\* Carlos Omenaca,‡  
Martin S. Topiel,§ Mark Galbraith,¶ Michael Tapper,# Tamara L. Fisk,\*\* Sherif  
Zaki,\* Tanja Popovic,\* Richard F. Meyer,\* Conrad P. Quinn,\* Scott A. Harper,\*  
Scott K. Fridkin,\* James J. Sejvar,\* Colin W. Shepard,\* Michelle McConnell,\*  
Jeannette Guarner,\* Wun- Ju Shieh,\* Jean M. Malecki,\*\* Julie L. Gerberding,\*  
James M. Hughes,\* Bradley A. Perkins,\* and members of the Anthrax  
Bioterrorism Investigation Team<sup>1</sup>

\*Centers for Disease Control and Prevention, Atlanta, Georgia, USA; †Emory University School of  
Medicine, Atlanta, Georgia, USA; ‡Cedars Medical Center, Miami, Florida, USA; §Virtua Health,  
Mount Holly, New Jersey, USA; ¶Winchester Medical Center, Winchester, Virginia, USA; #Lenox Hill  
Hospital, New York City, New York, USA; and \*\*Palm Beach County Department of Public Health,  
West Palm Beach, Florida, USA

From October 4 to November 2, 2001, the first 10 confirmed cases of inhalational anthrax caused by intentional release of *Bacillus anthracis* were identified in the United States. Epidemiologic investigation indicated that the outbreak, in the District of Columbia, Florida, New Jersey, and New York, resulted from intentional delivery of *B. anthracis* spores through mailed letters or packages. We describe the clinical presentation and course of these cases of bioterrorism-related inhalational anthrax. The median age of patients was 56 years (range 43 to 73 years), 70% were male, and except for one, all were known or believed to have processed, handled, or received letters containing *B. anthracis* spores. The median incubation period from the time of exposure to onset of symptoms, when known (n=6), was 4 days (range 4-6 days). Symptoms at initial presentation included fever or chills (n=10), sweats (n=7), fatigue or malaise (n=10), minimal or nonproductive cough (n=9), dyspnea (n=8), and nausea or vomiting (n=9). The median white blood cell count was  $9.8 \times 10^3 / \text{mm}^3$  (range 7.5 to 13.3), often with increased neutrophils and band forms. Nine patients had elevated serum transaminase levels, and six were hypoxic. All 10 patients had abnormal chest X-rays; abnormalities included infiltrates (n=7), pleural effusion (n=8), and mediastinal widening (seven patients). Computed tomography of the chest was performed on eight patients, and mediastinal lymphadenopathy was present in seven. With multidrug antibiotic regimens and supportive care, survival of patients (60%) was markedly higher (<15%) than previously reported.

Historically, human anthrax in its various forms has been a disease of those with close contact to animals or animal products contaminated with *Bacillus anthracis* spores. In the mid-1800s, inhalational anthrax related to the textile industry became known as woolsorters' disease (in England) (1) and ragpickers' disease (in Germany and Austria) because of the frequency of infection in mill workers exposed to imported animal fibers contaminated with *B. anthracis*

spores. In the early 1900s, human cases of inhalational anthrax occurred in the United States in conjunction with the textile and tanning industries. In the last part of the 20th century, with improved industrial hygiene practices and restrictions on imported animal products, the number of cases fell dramatically (1,2); however, death rates remained high (>85%) (1,3). In 1979, in Sverdlovsk, former Soviet Union, an apparent aerosol release of *B. anthracis* spores





# Recognizing New Side Effects

## THE LANCET

Search for

in All Fields

GO

Advanced



[Home](#) | [Journals](#) | [Collections](#) | [Audio](#) | [Conferences](#) | [Education](#) | [Resource Centres](#) | [For Authors](#) | [About Us](#) | [Subscribe](#)

The Lancet, [Volume 356, Issue 9234](#), Pages 1000 - 1001, 16 September 2000

[< Previous Article](#) | [Next Article >](#)

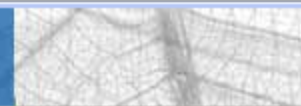
doi:10.1016/S0140-6736(00)02694-5 [? Cite or Link Using DOI](#)

### **Scleromyxoedema-like cutaneous diseases in renal-dialysis patients**

[Shawn E Cowper MD a](#), [Howard S Robin MD b](#), [Steven M Steinberg MD b](#), [Lyndon D Su MD c](#), [Samardeep Gupta MD c](#), [Philip E LeBoit MD a](#)  

#### **Summary**

15 renal dialysis patients have been identified with a skin condition characterised by tickening and hardening of the skin of the extremities and an increase in dermal fibroblast-like cells associated with collagen remodelling and mucin deposition. The disease closely resembles scleromyxoedema, yet has significant enough clinical and histopathological differences to warrant its designation as a new clinicopathological entity.



[Oxford Journals](#) > [Medicine](#) > [Nephrology Dialysis Transplantation](#) > [Volume 21, Number 4](#) > Pp. 1104-1108

◀ [Previous Article](#) | [Next Article](#) ▶

QUALITY BULK ARTICLE REPRINTS  
AVAILABLE

**NDT Advance Access originally published online on January 23, 2006**

Nephrology Dialysis Transplantation 2006 21(4):1104-1108; doi:10.1093/ndt/gfk062

© The Author [2006]. Published by Oxford University Press on behalf of ERA-EDTA. All rights reserved. For Permissions, please email: [journals.permissions@oxfordjournals.org](mailto:journals.permissions@oxfordjournals.org)

## Interesting Case

# Gadolinium – a specific trigger for the development of nephrogenic fibrosing dermatopathy and nephrogenic systemic fibrosis?

Thomas Grobner

Department of Nephrology, General Hospital of Wiener Neustadt, A-2700 Wiener Neustadt, Austria

*Correspondence and offprint requests to:* Dr Thomas Grobner, 2. Interne Abteilung, Krankenhaus Wiener Neustadt, Corvinusring 3–5, A-2700 Wiener Neustadt, Austria. Email: [dr.thomas.grobner@aon.at](mailto:dr.thomas.grobner@aon.at)

**Keywords:** end stage renal disease; gadolinium–DTPA; metabolic acidosis; nephrogenic fibrosing dermatopathy

The first 150 words of the **full text** of this article appear below.

### This Article

- ▶ [Full Text](#) **FREE**
- ▶ [FREE Full Text \(PDF\)](#) **FREE**
- ▶ [An erratum has been published](#)
- ▶ **All Versions of this Article:**  
21/4/1104 *most recent*  
[gfk062v1](#)
- ▶ [Alert me when this article is cited](#)
- ▶ [Alert me if a correction is posted](#)

### Services

- ▶ [Email this article to a friend](#)
- ▶ [Similar articles in this journal](#)
- ▶ [Similar articles in ISI Web of Science](#)
- ▶ [Similar articles in PubMed](#)
- ▶ [Alert me to new issues of the journal](#)
- ▶ [Add to My Personal Archive](#)
- ▶ [Download to citation manager](#)
- ▶ **Search for citing articles in:**  
[ISI Web of Science \(398\)](#)
- ▶ [Request Permissions](#)
- ▶ [Disclaimer](#)

### Citing Articles

- ▶ [Similar articles](#)

# Discovery of New Drugs

Case reports of side effects led to the creation of Viagra



"None of us at Pfizer thought much of the side effect at the time. I remember thinking that, even if it did work, who would want to take a drug on a Wednesday to get an erection on a Saturday?"

**How I discovered Viagra**

[Cosmos, June 2007](#)

by Ian Osterloh

# Selecting a Case

## What makes a great case?

*Every patient you see is a lesson in much more than the malady from which he suffers.”*

-William Osler

# Great Cases

- Uncommon presentation of common disease
  - Diabetic muscle infarction
- Common presentation of uncommon disease
  - Yellow nail syndrome
- A recent diagnostic or therapeutic advance
  - TTP – use of ADAMTS-13
- Clinical pearl for physical exam or history
  - Muerkhe's nails



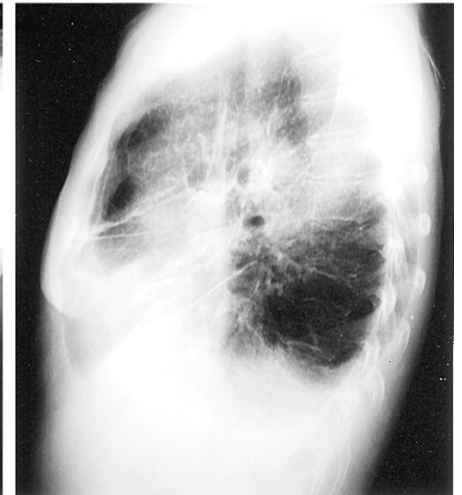
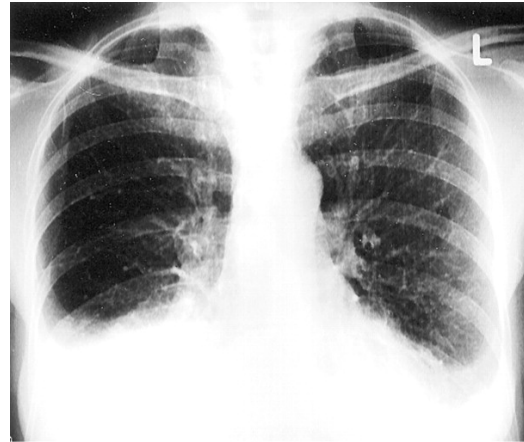
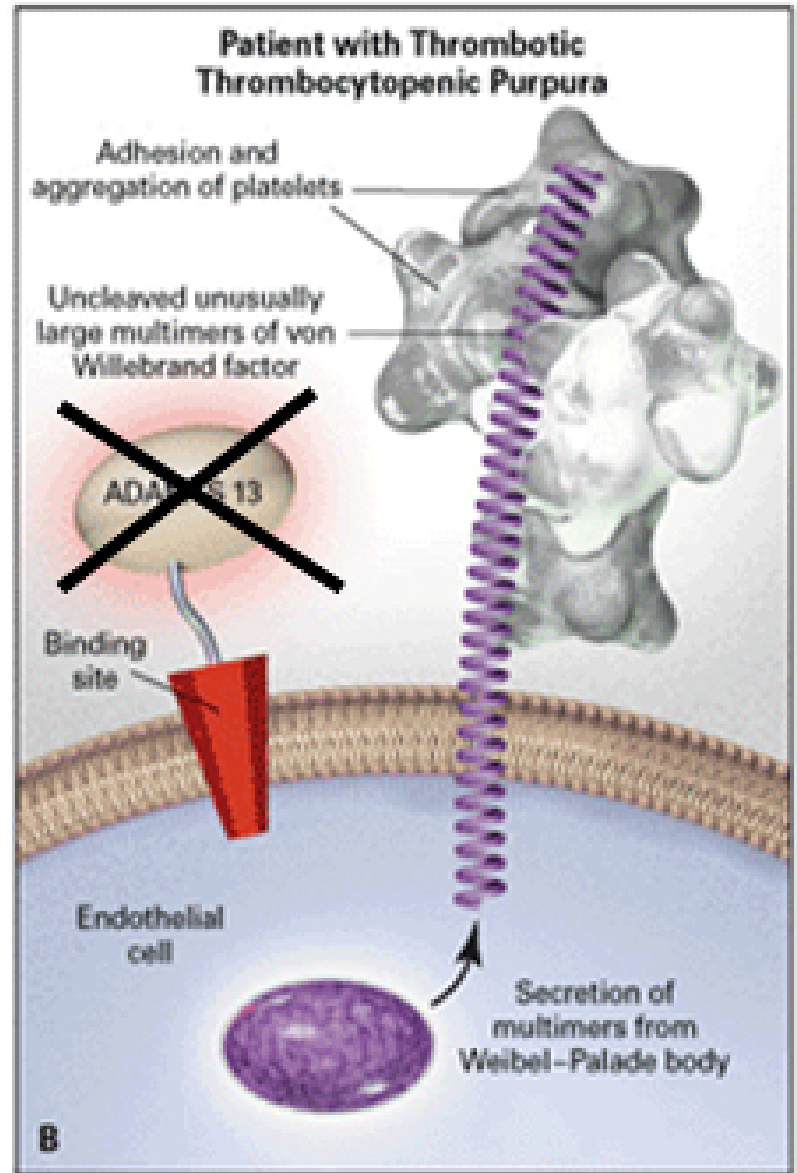
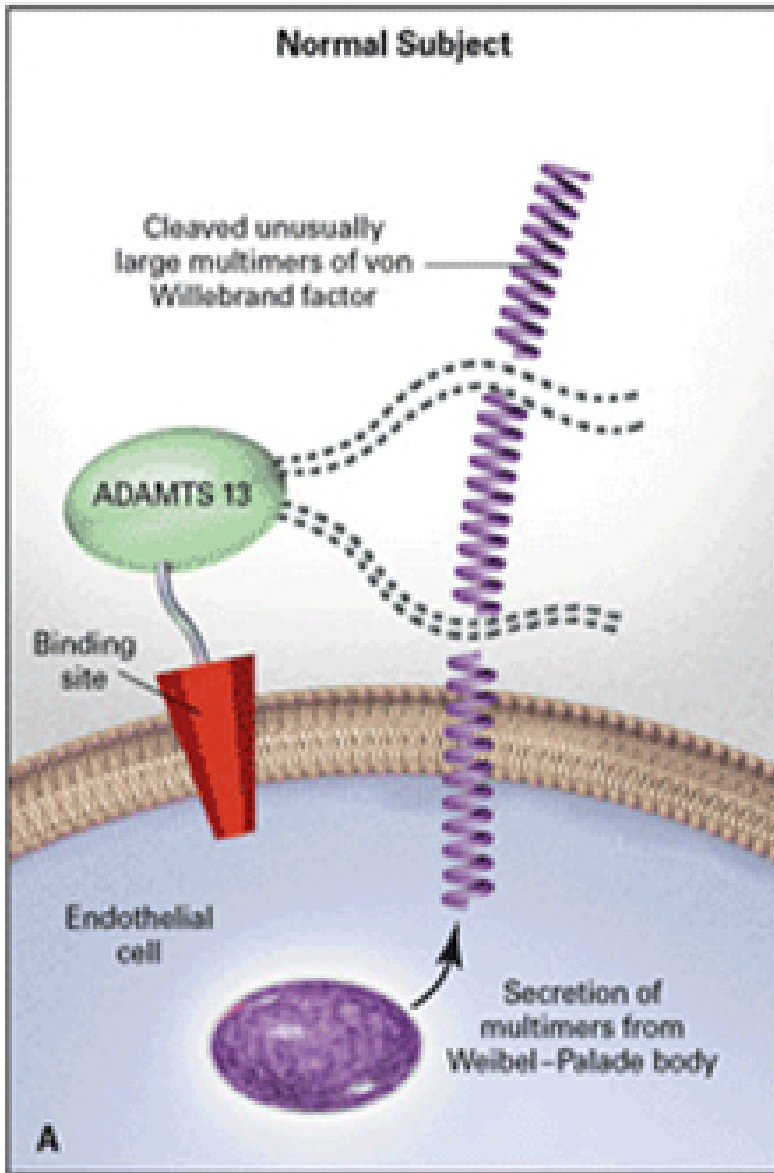


Figure 2 - Image showing lymphedema and unguinal alterations

## Yellow Nail Syndrome



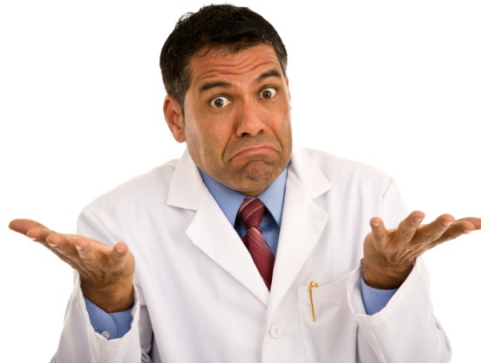


<http://img.medscape.com/pi/emed/ckb/dermatology/1048885-1105737-1106423-1106488.jpg>



You may have  
an interesting case...

But does it have a diagnosis?



Must use cases that culminate with at  
least a presumed diagnosis or illustrate  
clinical pearl

# Art & Science of Diagnosis for Interesting Cases

- Not leaving stones unturned
  - Fight the urge for early closure
- Asking the right questions
- Looking for unifying associations or explanations



# Patterns of Diagnosis

## NOVICE

- **exhaustive method**
  - every possible question is asked and all possible data is collected
- **algorithmic method**
  - provider follows the steps of a proven strategy

## EXPERT

- **differential diagnosis**
  - provider uses a systematic, problem-focused method of inquiry
- **pattern-recognition method**
  - provider uses experience to recognise a pattern of clinical characteristics
  - “power of observation

# The Real Sherlock Holmes

- Dr. Doyle's physician mentor
  - Making diagnoses depend on close observation
- To keep students interested in learning how to observe
  - Would use observation to demonstrate occupation and recent activities
- Pioneer in forensic science to investigate crimes



Dr. Joseph Bell

# Knowing When to Diagnose: Avoiding Zebra Chasing

- Overlook common diagnoses
- Leads to inappropriate care
- Diagnostic testing
  - Costly
  - Overused
  - Risky
    - Radiation for imaging
    - Work up of incidentalomas



# Case

- A 40 yo female with the diagnosis of severe asthma presents to ED for shortness of breath and wheezing. She has been in and out of hospitals for the past 3 months and has not been able to go off steroids without getting worse. However, she ran out of her asthma medicines including steroids last week. She is not a smoker. She has a peripheral eosinophilia of 10%. CXR is normal.
- Most common?
- Things to rule out?

# Avoiding Misdiagnosis

Bias	What	Who	Example
<b>Anchoring</b>	Rely on initial impression despite contrary information	Anyone esp during handoffs	ER resident says “asthma” patient so you treat it as asthma
<b>Availability</b>	Go with what it was the last time you heard	Anyone esp those with little experience	Last patient you heard about like this patient had ABPA
<b>Representative</b>	Fixate on one thing despite many other data points	Anyone esp those with little experience	Hear eosinophila and it MUST be Churg-Strauss
<b>Blind obedience</b>	Overreliance on consultant opinion or a test	Anyone!	She’s seen by pulmonary so must be asthma

# Tools to Make the Diagnosis



- OCCAM'S RAZOR
- HICKAM'S DICTUM
- SUTTON'S LAW
- PASTEUR'S DICTUM



# Occam's Razor

*"entities must not be multiplied beyond necessity"*

- shaving away unnecessary assumptions to get to simplest explanation
- Diagnostic parsimony



Ockham chooses a razor

*Counterfactual to Occam's razor*

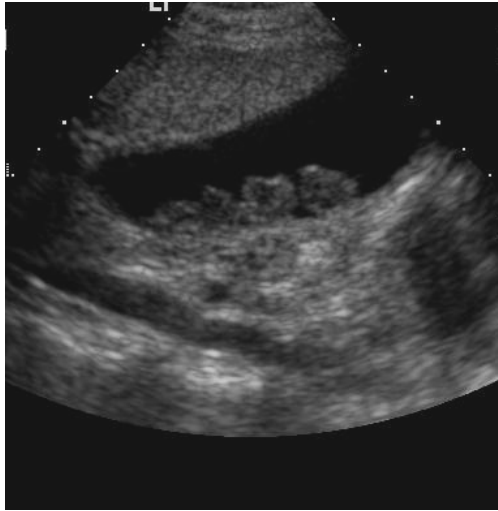
## Hickam's dictum

"Patients can have as many diseases as they damn well please"

John Hickam, MD

# “What on earth is Saint’s Triad?”

-Dr. C.F.M. Saint



Gallstones

Constellation of symptoms is often explained by several common diseases rather than one single rare disease



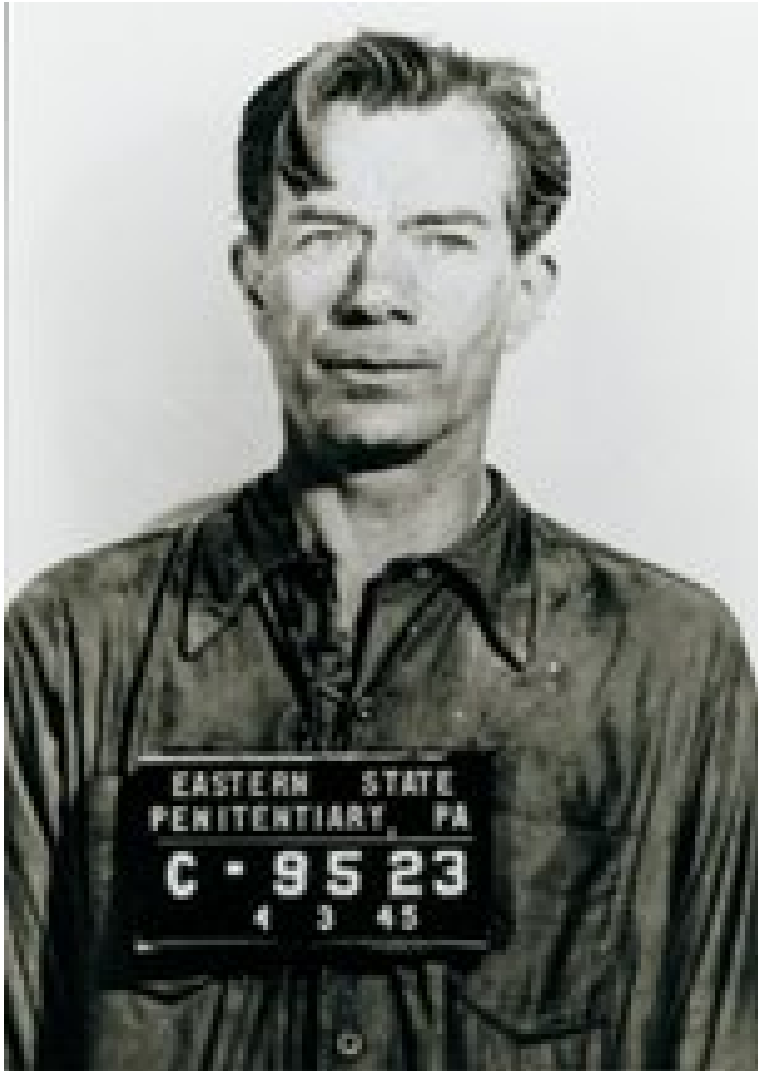
Diverticula

Hilliard AA NEJM 2004



Hiatal Hernia

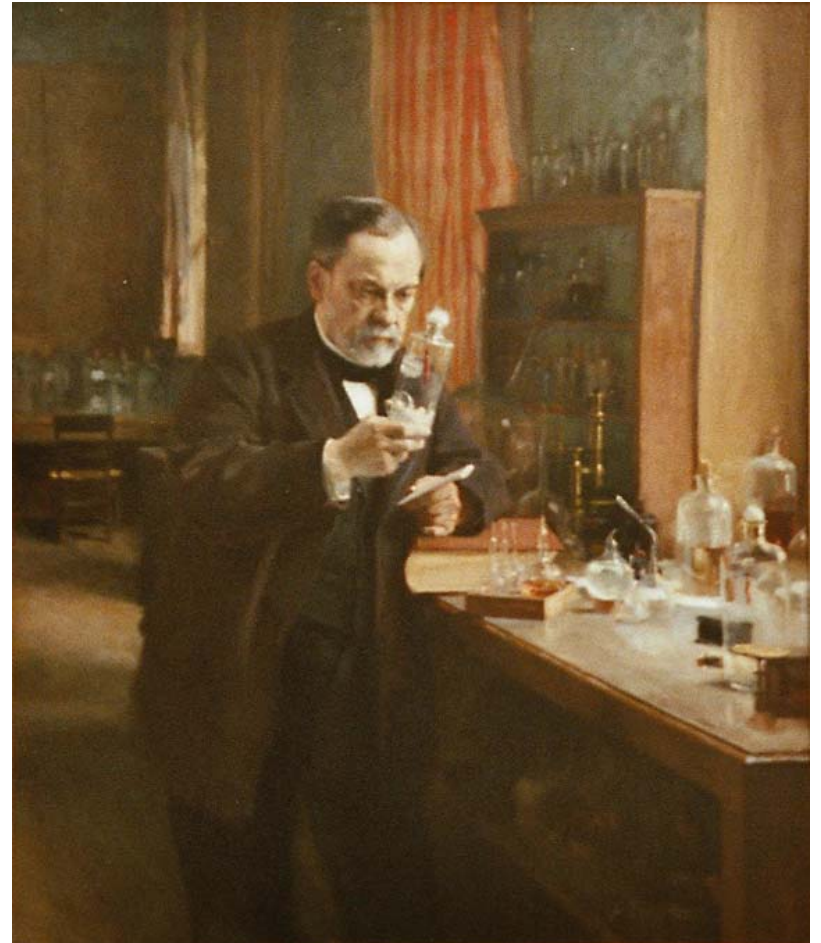
# Sutton's Law



- First, consider the obvious
  - Conduct the test which will confirm (or rule out) the most likely diagnosis
- Bank robber Willie Sutton, when asked why he robbed banks supposedly answered
  - “because that's where the money is“

# *"chance favors the prepared mind"*

- **Pasteur's dictum**
- Must have the existing knowledge & skills to be able to make the 'leap'
- Cannot find an interesting case if you are not reading or looking



# Steps to Writing Up A Case

- Selecting a Case
- Literature Search
- Collecting Information (Review Chart)
- Check Formatting (abstract etc.)
- Start Writing
- Get Input Revise
- Get More Input and Revise Again
- Submit!

# Consulting the Literature

- Is this common?
- How often is it reported?
- Pubmed
  - MeSH headings
- Google
  - To help locate source literature
- Beware of 'grey literature'





# Reviewing the Chart



# Chart Artifacts from Epic

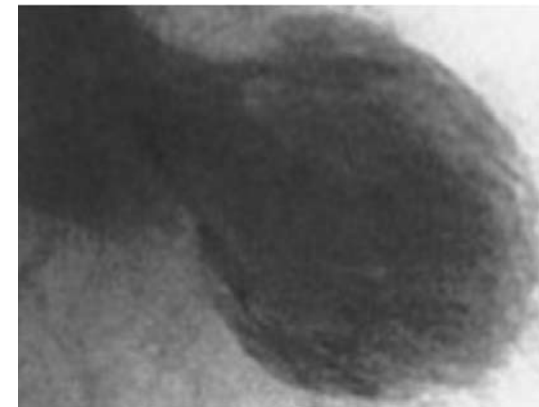
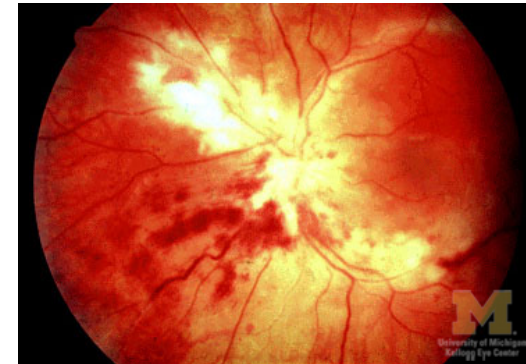
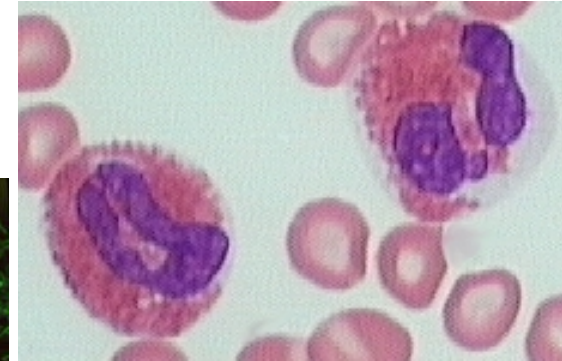
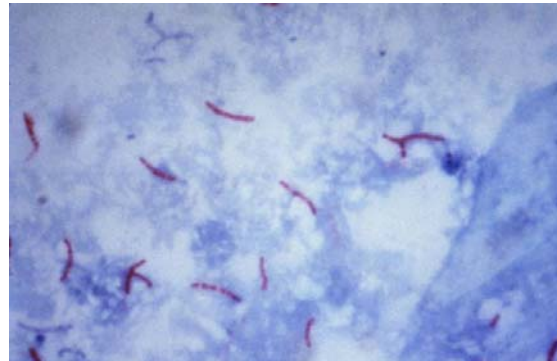
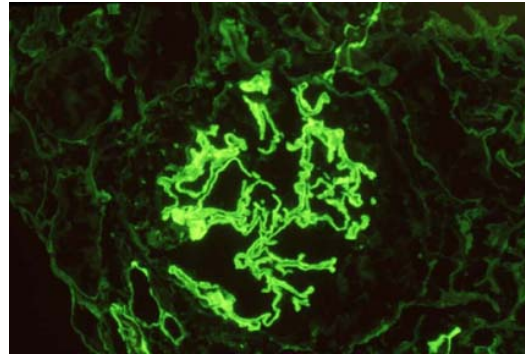
- Secure the Admission History & Physical
- Relevant Progress Notes
- EKG (especially if abnormal)
- Labs
  - Routine Labs (CBC/ BMP/ LFTs/ Coags)
  - Other heme labs (i.e. anemia workup)
  - Endocrine or Nutrition Labs
  - Relevant rheumatology labs
  - Microbiology
  - ABG
  - Other Labs

# Chart Artifacts from Epic

- Imaging – report and actual images
  - CXR
  - Other plain films
  - CT
  - MRI
  - Other
- *May need to review with radiologist to select proper image to display*
- REMOVE MRN AND ALL PHI PRIOR TO USE!

# Other Images from Consultants

- Hematology
  - Smears
- Pathology
  - Biopsy? Surg path?
- GI
  - Colonoscopy, etc.
- Microbiology
  - Cultures
- Cardiology
  - Echocardiogram
  - Angiogram
- Vascular Lab
  
- Harder to get
  - Only if critical in diagnosis



# Patient Pictures

- Consent for photos
- High resolution
- Key physical exam finding
- Rash or clinical pearl





# Writing the Abstract

# 3 Principles

1. Make sure the case is interesting
2. Include only pertinent information
3. Be concise

*Irrelevant material or excessive detail can obscure the essence of a report and repel editors and readers.*

# Abstract

- Check format
  - Check word count (450 words for IL ACP)
  - Subheadings
- Use every word wisely
  - Is there a shorter way to say the same thing
- Reserve enough space for discussion

# Typical Headings

- Objective – short 1-2 lines
- Case Description – less than half
- Discussion – more than half



# Objective

- Begins with 'To'
- Use action verbs
  - Characterize
  - Elucidate
  - Highlight
  - Demonstrate
  - Familiarize
- In enough detail to highlight what the case is about
- If the format calls for objectives, okay to give away the diagnosis here...

# Case Description

- Follow rules of basic medical presentation
  - Start with history, physical exam
  - Only include pertinent positives and negatives that relate to diagnosis
- Results of relevant studies
  - Ways that diagnosis was confirmed
- End with the diagnosis
  - Include any patient follow-up

# Case Discussion

- Start with what the condition is
  - How frequent is it?
- Consider a historical pearl or fact
  - When was this disease recognized
- Hallmarks of the condition
- Prognosis & Treatment of condition
- Relate it back to your patient

# Last sentence

- What is the take home point for clinicians?  
(end with this pearl)
  - Modify for meeting you are submitting to  
(hospitalists, generalists, subspecialists)
- Best abstracts make a small number of teaching points (even just one) in clear and succinct language

# Abstract Pitfalls

- Over wordcount
  - Trim words
  - Say it in less words
  - Remove unnecessary details from case
  - Focus discussion
- Not enough room for discussion
  - Case description too detailed
  - OK to say “rheum workup negative”

# More Pitfalls: Referring to Patients

- Confusing patients for body parts of procedures
  - Cyclosporin is used to treat organ transplant (used to treat patients with organ transplants)
- Treating patients like commodities
  - We managed the patient with antibiotics (We treated..)
  -
- Blaming the patient
  - The patient failed to follow-up (Patient was lost to ..)

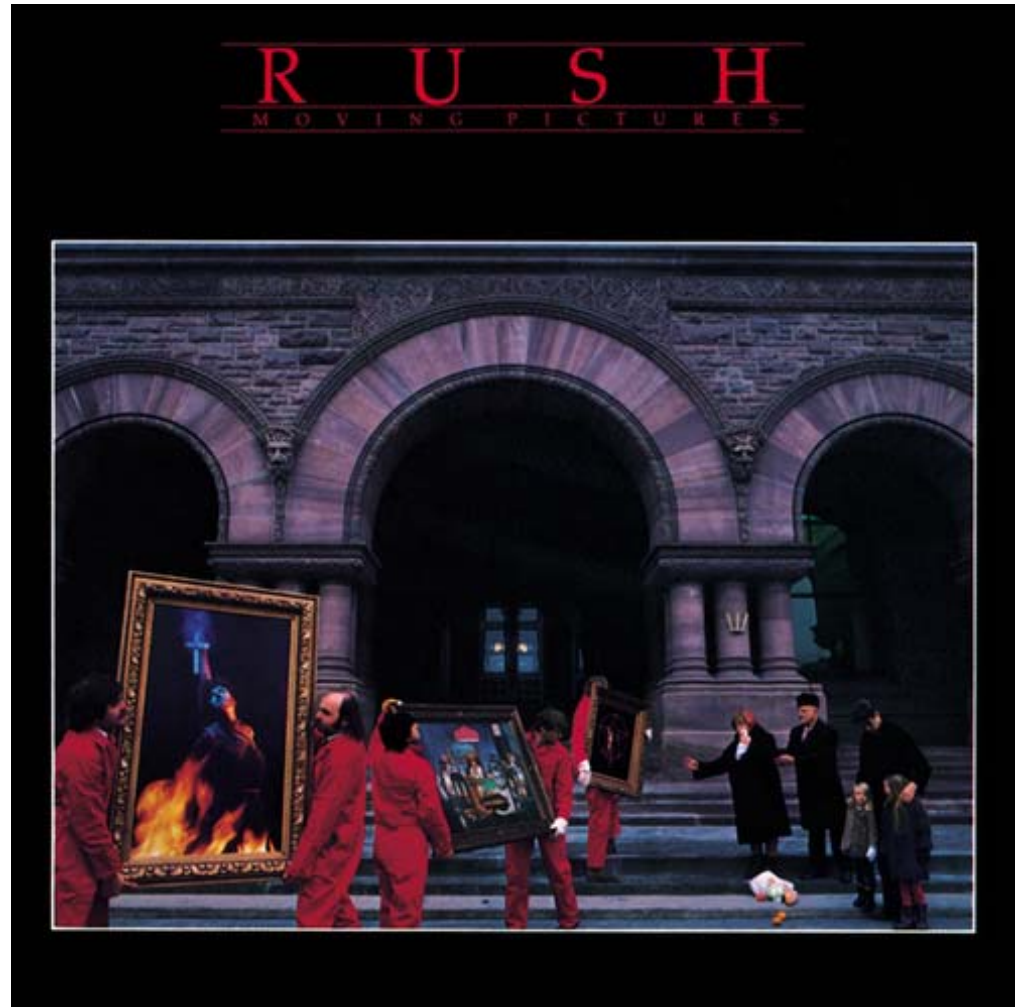
# More Pitfalls

- Abbreviations
  - No more than 3
  - favor commonly used abbreviations
  - Spell out first time mentioned unless very common (e.g., CBC)

# Titles

- Think of last
  - may need to dwell on it a bit..

- short, descriptive, and interesting
  - Peak interest
- Do not give away the diagnosis
  - But could use obscure eponym
- **aditanoeta**
  - Double entendre
  - Pun with double meaning





# Sample Titles

- “Nail”ing the Diagnosis
- TTP or Not TTP?
- Tissue is the Issue: An unusual cause of hepatosplenomegaly and pancytopenia
- Collateral Damage

# Questions

# Department of Diagnostic Medicine



# Diagnosis & Detectives

- Sir Arthur Conan Doyle & Holmesian deduction
  - Draw inferences based on straightforward practical principles
  - Based on careful observation and attribution to the best explanation

*"When you have eliminated the impossible, whatever remains, however improbable, must be the truth"*

