



Evidence Solutions, Inc.

Present:

Electronic Medical Record Forensics:

Trust the Data, Not the Software!

December 2, 2017

Presented by:

Scott Greene, SCFE, CEO  
Evidence Solutions, Inc.

A Digital Forensics Firm

866-795-7166

[Scott@EvidenceSolutions.com](mailto:Scott@EvidenceSolutions.com)



## *Biography*

### Scott Greene

Scott is the CEO of Evidence Solutions, Inc. Scott Greene has been doing Data Recovery, Computer, Technology and Digital Forensics, and EDiscovery work for over 35 years.

Directly out of high school, Scott went to work for IBM as a programmer.

In 2008 he created Evidence Solutions, Inc., a full service Computer, Technology & Digital Forensics firm, from the Technology Forensics department of Great Scott Enterprises.

Scott has developed and presented strategic planning seminars, taught numerous classes in database design & optimization, cyber security and technology forensics. Scott's extensive knowledge draws clients to him from all over the United States as well as Internationally for consulting and expert witness services in the field of Technology, Computer & Digital Forensics. His extensive and diverse experience allows him to be an expert in many facets of computer & digital technology.

Scott and Evidence Solutions have been involved in Civil & Criminal Cases, for Plaintiff, Defense and Special Master in Justice, Superior & District Courts as well as Internationally.

He is a sought after speaker and educator and travels throughout the country presenting to local, regional, national and International organizations.

---

Computer, Technology, and Digital Forensics for Over 35 Years.

[www.EvidenceSolutions.com](http://www.EvidenceSolutions.com)

[Scott@EvidenceSolutions.com](mailto:Scott@EvidenceSolutions.com)

# Case Studies in Electronic Medical Record Data Manipulation

Faculty:  
Scott Greene

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---

## Scott Greene

- Has been doing computer consulting for over 35 years.
- Performing:
  - Custom programming
  - Design and optimization
  - Database administration
  - Network and workstation general support
- For:
  - Service
  - Retail
  - Hospitality
  - Legal
  - Manufacturing
  - Medical

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---

## How am I going to get there?

- A Civil Case: Medical Billing
- With a few other things thrown in...
  - EMR Forensics For Instance

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---

### Electronically Stored Information in Litigation

- Frequently we are presented with data that appears perfectly normal and supports a particular side to a case.
- Unfortunately software, displays data in a sorted and organized form. Manipulated Data will not be evident when looking at standard reports.

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---

### Reasons to examine electronic data

- Almost all documents are now 'word processing' documents.
- Nearly all business activities are now computerized
- E-mail communications have surpassed telephone and postal ( snail mail ) communication.
- Text Messages now overshadow E-mail

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---

### What can data Forensics Tell Us?

- Almost Everything: from the character of the user to their interests, activities, financial health, acquaintances and more.
- Collected from their life online: applications, email systems, web browsers and free space.
- The details from their life, outlook, intelligence and interactions are as individual as any fingerprint.
- All Public & Private business transactions, communications with accomplices, fraud indicators and much more are frequently available.

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

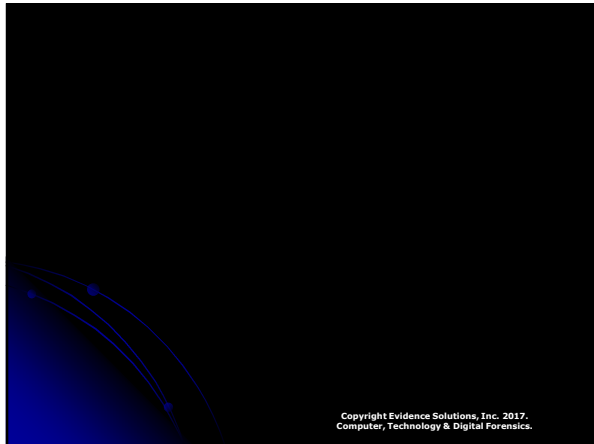
---

---

---

---

---



---

---

---

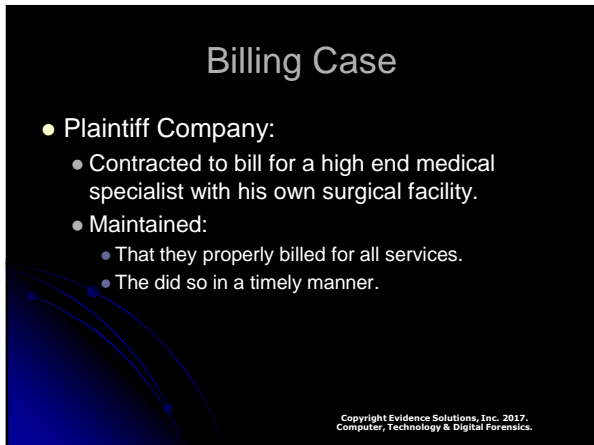
---

---

---

---

---



---

---

---

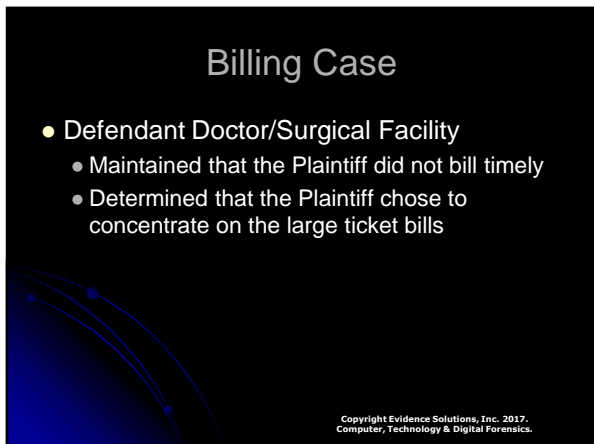
---

---

---

---

---



---

---

---

---

---

---

---

---

### Case BS ( Before Scott )

- Procedural issues of the billing dispute
- Discovery disputes – billing company claimed that it didn't have certain data
- Arbitrator failed to order production of billing software until eve of arbitration

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---

### Scott's Special Master Tasks

- Evidence Solutions was tasked with analyzing the software and determining what standard reports were available from the system.

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---

### Scott's Special Master Tasks

- Unable to get the software running we decided to look at the data.

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---




---

---

---

---

---

---

---

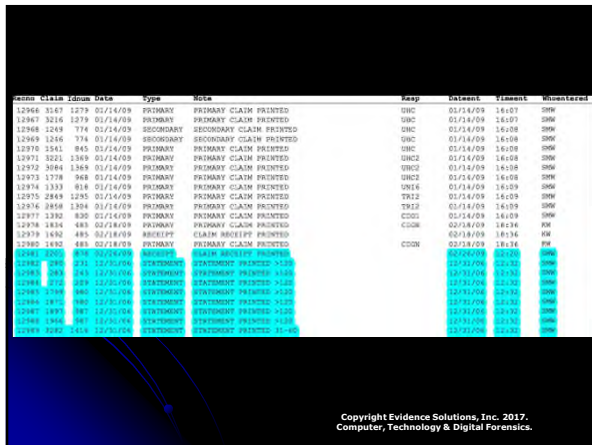
---

---

---

---

---




---

---

---

---

---

---

---

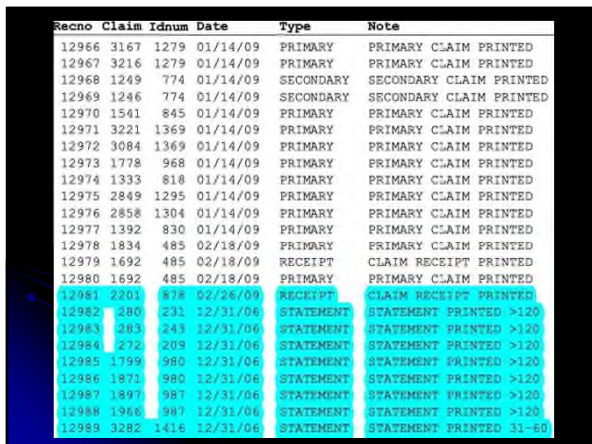
---

---

---

---

---




---

---

---

---

---

---

---

---

---

---

---

---

Note	Resp	Dateent	Timeent	Who
PRIMARY CLAIM PRINTED	UHC	01/14/09	16:07	SMW
PRIMARY CLAIM PRINTED	UHC	01/14/09	16:07	SMW
SECONDARY CLAIM PRINTED	UHC	01/14/09	16:08	SMW
SECONDARY CLAIM PRINTED	UHC	01/14/09	16:08	SMW
PRIMARY CLAIM PRINTED	UHC	01/14/09	16:08	SMW
PRIMARY CLAIM PRINTED	UHC2	01/14/09	16:08	SMW
PRIMARY CLAIM PRINTED	UHC2	01/14/09	16:08	SMW
PRIMARY CLAIM PRINTED	UHC2	01/14/09	16:08	SMW
PRIMARY CLAIM PRINTED	UNI6	01/14/09	16:09	SMW
PRIMARY CLAIM PRINTED	TRI2	01/14/09	16:09	SMW
PRIMARY CLAIM PRINTED	TRI2	01/14/09	16:09	SMW
PRIMARY CLAIM PRINTED	CIG1	01/14/09	16:09	SMW
PRIMARY CLAIM PRINTED	CIGN	02/18/09	18:36	KW
CLAIM RECEIPT PRINTED		02/18/09	18:36	KW
PRIMARY CLAIM PRINTED	CIGN	02/18/09	18:36	KW
CLAIM RECEIPT PRINTED		02/28/09	12:20	SMW
STATEMENT PRINTED >120		12/31/06	12:32	SMW
STATEMENT PRINTED >120		12/31/06	12:32	SMW
STATEMENT PRINTED >120		12/31/06	12:32	SMW
STATEMENT PRINTED >120		12/31/06	12:32	SMW
STATEMENT PRINTED >120		12/31/06	12:32	SMW
STATEMENT PRINTED >120		12/31/06	12:32	SMW
STATEMENT PRINTED >120		12/31/06	12:32	SMW
STATEMENT PRINTED >120		12/31/06	12:32	SMW
STATEMENT PRINTED 31-60		12/31/06	12:32	SMW

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

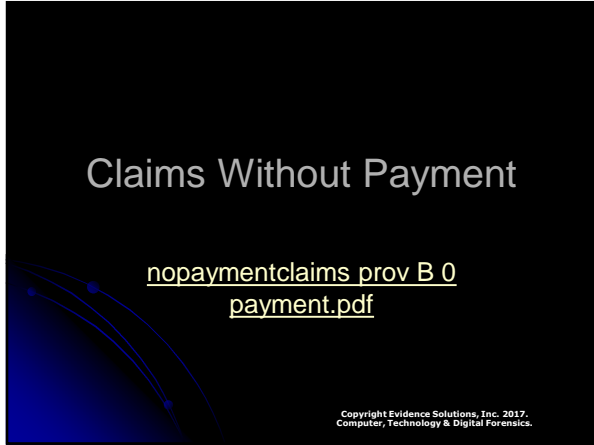
---

---

---

---

---



---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

Claims with No Payment Detail Report  
Sorted by 'Claim'.

Patient	Claim Date	Claim Dateent	Claim Number	Provider	Procedure Amount
75	02/22/05	04/13/05	77	B	3,500.00
77	04/13/05	04/13/05	79	B	12,500.00
Total for: April					16,000.00
Grand Total for Report:					16,000.00

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---



Payment Amount	Adjustment or Writeoff		Write off Date	Activity Date	
	%	Amount			
0.00	0.0	-3,500.00	100.0	09/27/05	09/27/05
0.00	0.0	-12,500.00	100.0	12/31/06	05/14/09
0.00		-16,000.00			
0.00	0.0	-16,000.00	100.0		

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

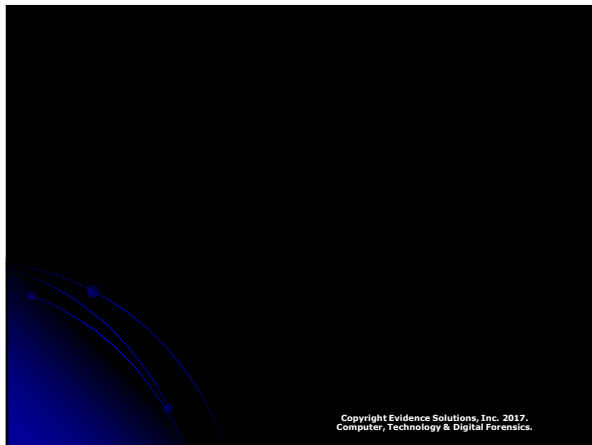
---

---

---

---

---



---

---

---

---

---

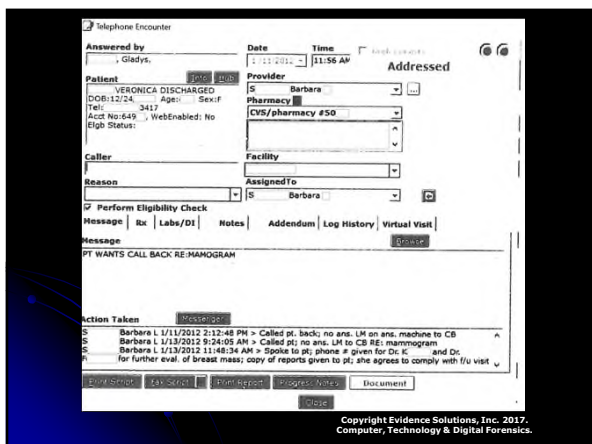
---

---

---

---

---



---

---

---

---

---

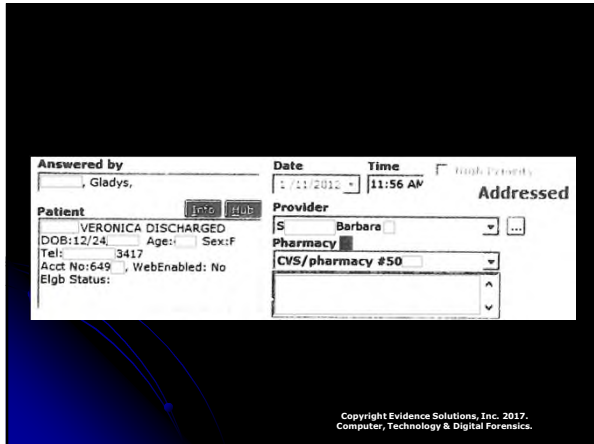
---

---

---

---

---



---

---

---

---

---

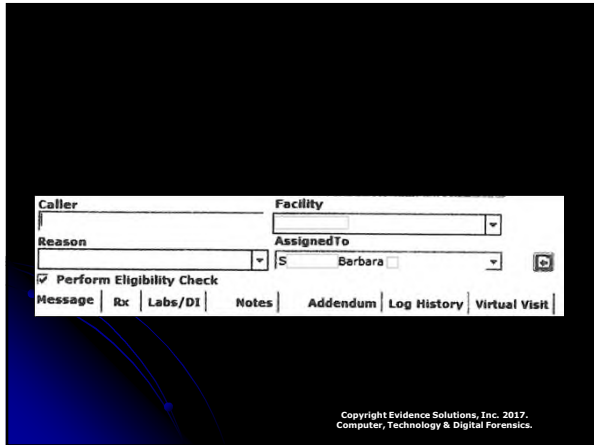
---

---

---

---

---



---

---

---

---

---

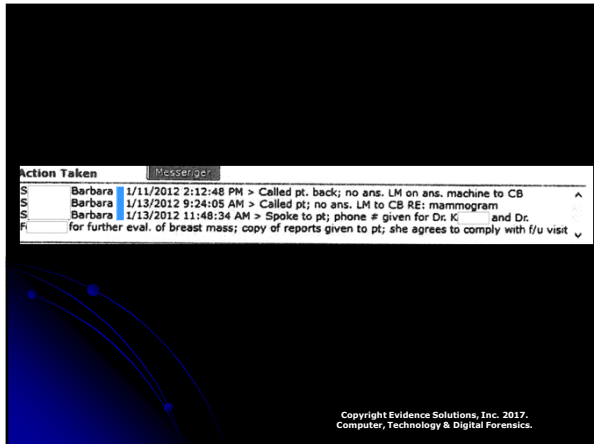
---

---

---

---

---



---

---

---

---

---

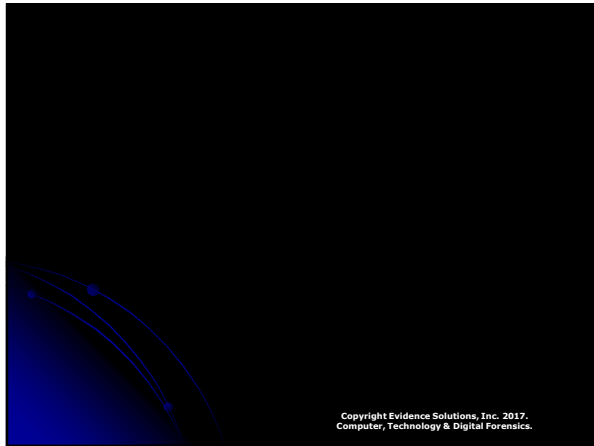
---

---

---

---

---



---

---

---

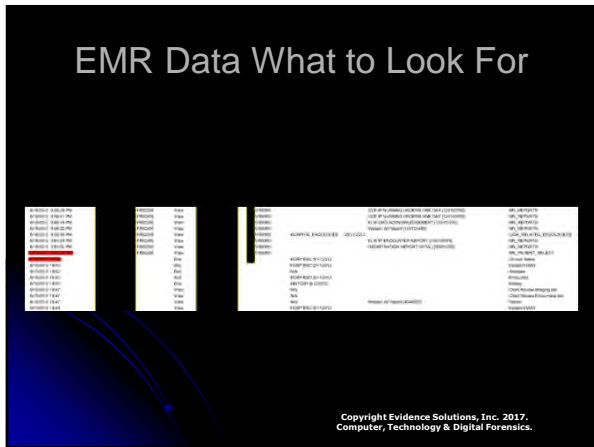
---

---

---

---

---



---

---

---

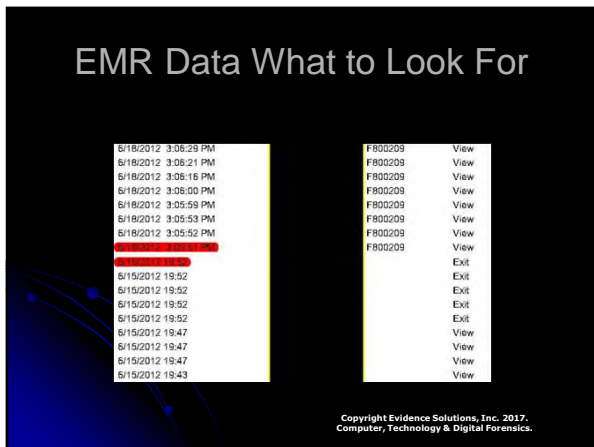
---

---

---

---

---



---

---

---

---

---

---

---

---



rank	TIMESTAMP	MRN	PATIENT NAME	FACILITY	NURSE_UNIT
	011/20/2011 16:38:51 EST	ES1936273	MARY	SMY	EMRM
	111/20/2011 16:39:07 EST	ES1936273	MARY	SMY	EMRM
	211/20/2011 16:39:07 EST	ES1936273	MARY	SMY	EMRM
	311/20/2011 16:39:08 EST	ES1936273	MARY		
	411/20/2011 16:41:58 EST	ES1936273	MARY	SMY	EMRM
	511/20/2011 16:42:05 EST	ES1936273	MARY	SMY	EMRM
	611/20/2011 16:42:05 EST	ES1936273	MARY	SMY	EMRM
	711/20/2011 16:42:05 EST	ES1936273	MARY	SMY	EMRM
	811/20/2011 16:42:06 EST	ES1936273	MARY	SMY	EMRM
	911/20/2011 16:42:06 EST	ES1936273	MARY		
	1011/20/2011 16:42:06 EST	ES1936273	MARY	SMY	EMRM
	1111/20/2011 16:42:07 EST	ES1936273	MARY	SMY	EMRM
	1211/20/2011 16:44:05 EST	ES1936273	MARY	SMY	EMRM
	1311/20/2011 16:44:06 EST	ES1936273	MARY	SMY	EMRM

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---

---

---

---

---

USER_NAME	PRSNL_NAME	ROLE	DEVICE_NAME	CITRIX_SERVER
RJOHNSON1	Ryan	AHTU_PathNet: Medical Technologist	BA108588	AHTUAZCTX19
RJOHNSON1	Ryan	AHTU_PathNet: Medical Technologist	BA108588	AHTUAZCTX19
RJOHNSON1	Ryan	AHTU_PathNet: Medical Technologist	BA108588	AHTUAZCTX19
RJOHNSON1	Ryan	AHTU_PathNet: Medical Technologist	BA108588	AHTUAZCTX19
RJOHNSON1	Ryan	AHTU_PathNet: Medical Technologist	BA108588	AHTUAZCTX19
RJOHNSON1	Ryan	AHTU_PathNet: Medical Technologist	BA108588	AHTUAZCTX19
RJOHNSON1	Ryan	AHTU_PathNet: Medical Technologist	BA108588	AHTUAZCTX19
SYSTEM	SYSTEM	DBA	ahuaaz2	NO INFO
SYSTEM	SYSTEM	DBA	ahuaaz2	NO INFO
RJOHNSON1	Ryan	AHTU_PathNet: Medical Technologist	BA108588	AHTUAZCTX19
SYSTEM	SYSTEM	DBA	ahuaaz2	NO INFO
SYSTEM	SYSTEM	DBA	ahuaaz2	NO INFO
SYSTEM	SYSTEM	DBA	ahuaaz2	NO INFO
SYSTEM	SYSTEM	DBA	ahuaaz2	NO INFO

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---

---

---

---

---

APPLICATION	EVENT_NAME	EVENT_TYPE
PathNet General Lab: Accession Result Entry	Lab Common Inquiry	View Results
PathNet General Lab: Accession Result Entry	Lab Common Modify	Maintain Results
PathNet General Lab: Accession Result Entry	Maintain Order	Tasks
PathNet General Lab: Accession Result Entry	Maintain Clinical Events	Write/Update Results
PathNet General Lab: Accession Result Entry	Lab Common Inquiry	View Results
PathNet General Lab: Accession Result Entry	Lab Common Modify	Maintain Results
PathNet General Lab: Accession Result Entry	Maintain Order	Tasks
Servers and Services: Discern Expert Server	View Orders	Modify Details
Servers and Services: Discern Expert Server	View Orders	Modify Details
PathNet General Lab: Accession Result Entry	Maintain Clinical Events	Write/Update Results
Server: Om Order Write	Maintain Order	Tasks
Server: Inbound Dispense Server	Maintain Order	Medication
Server: Inbound Dispense Server	Maintain Order	Medication

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---

---

---

---

---

Task	PROJECT ID: 7192	PROJECT ID: FIVEPOINT 2146
Assemble	7/27/11 13:45:23	
Assemble	7/27/11 13:45:23	
UPDATE: Results	Clear	10/26/11 09:01:15 New call: Collected. Start Date 11/01/11 10:00, Stop Date 11/01/11 10:00, Data Cast, User Caste F 0000 x of = 10 WDCAP or Linkup.
UPDATE: Results	Failed	2/17/10 09:01:15
Assemble	7/27/11 13:45:23	
UPDATE: Results	Clear	10/26/11 09:01:15 New call: Start Date 11/01/11 10:01, 11/01/11 10:01
Full System Config Setup Task	Clear	10/26/11 09:01:15 New call: Stop Date 11/01/11 10:01, 11/01/11 10:01
Full System Config Setup Task	Clear	10/26/11 09:01:15 New call: Start Date 11/01/11 10:01, 11/01/11 10:01
UPDATE: Results	Failed	2/17/10 09:01:15
UPDATE: Results	Clear	10/26/11 09:01:15 New call: Collected. Start Date 11/01/11 10:01, 11/01/11 10:01
UPDATE: Results	Clear	10/26/11 09:01:15 New call: Collected. Start Date 11/01/11 10:01, 11/01/11 10:01
Full System Config Setup Task	Clear	10/26/11 09:01:15 New call: Stop Date 11/01/11 10:01, 11/01/11 10:01
Full System Config Setup Task	Clear	10/26/11 09:01:15 New call: Start Date 11/01/11 10:01, 11/01/11 10:01
Full System Config Setup Task	Clear	10/26/11 09:01:15 New call: Stop Date 11/01/11 10:01, 11/01/11 10:01
Full System Config Setup Task	Clear	10/26/11 09:01:15 New call: Start Date 11/01/11 10:01, 11/01/11 10:01

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---

---

---

---

---

Task	PROJECT ID: 7192	PROJECT ID: FIVEPOINT 2146
Assemble	7/27/11 13:45:23	
Assemble	7/27/11 13:45:23	
UPDATE: Results	Clear	10/26/11 09:01:15 New call: Collected. Start Date 11/01/11 10:00, Stop Date 11/01/11 10:00, Data Cast, User Caste F 0000 x of = 10 WDCAP or Linkup.
UPDATE: Results	Failed	2/17/10 09:01:15
Assemble	7/27/11 13:45:23	
UPDATE: Results	Clear	10/26/11 09:01:15 New call: Start Date 11/01/11 10:01, 11/01/11 10:01
Full System Config Setup Task	Clear	10/26/11 09:01:15 New call: Stop Date 11/01/11 10:01, 11/01/11 10:01
Full System Config Setup Task	Clear	10/26/11 09:01:15 New call: Start Date 11/01/11 10:01, 11/01/11 10:01
UPDATE: Results	Failed	2/17/10 09:01:15
UPDATE: Results	Clear	10/26/11 09:01:15 New call: Collected. Start Date 11/01/11 10:01, 11/01/11 10:01
UPDATE: Results	Clear	10/26/11 09:01:15 New call: Collected. Start Date 11/01/11 10:01, 11/01/11 10:01
Full System Config Setup Task	Clear	10/26/11 09:01:15 New call: Stop Date 11/01/11 10:01, 11/01/11 10:01
Full System Config Setup Task	Clear	10/26/11 09:01:15 New call: Start Date 11/01/11 10:01, 11/01/11 10:01
Full System Config Setup Task	Clear	10/26/11 09:01:15 New call: Stop Date 11/01/11 10:01, 11/01/11 10:01
Full System Config Setup Task	Clear	10/26/11 09:01:15 New call: Start Date 11/01/11 10:01, 11/01/11 10:01

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---

---

---

---

---

## What to Ask for?

- **Request for Production**
- **No. 1:** All information in your possession regarding your patient Jane Smith. This request is specifically intended to require production of information beyond what may be deemed the medical records or the "designated record set."

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---

---

---

---

---

### What to Ask for?

- **No. 1:** In the event you maintain an electronic medical records system, this request for production is intended to require the production of every possible data set (or categories of data) that your electronic medical record system can provide. In the event you claim that information in your possession is privileged or work product, provide a privilege log specifying the privileged items.

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---

### What to Ask for?

- **No. 2:** The print screen of Defendant's EMR computer system that provides the data sets that Defendant may select for printing of Plaintiff's medical records.

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---

### What to Ask for?

- **No. 3:** Any Room Activity Report, Detailed Room Activity Report, and/or any report documenting any visit by hospital personnel or health care providers to decedent/patient's room or that tracks the location and timing of decedent/patient in the hospital

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

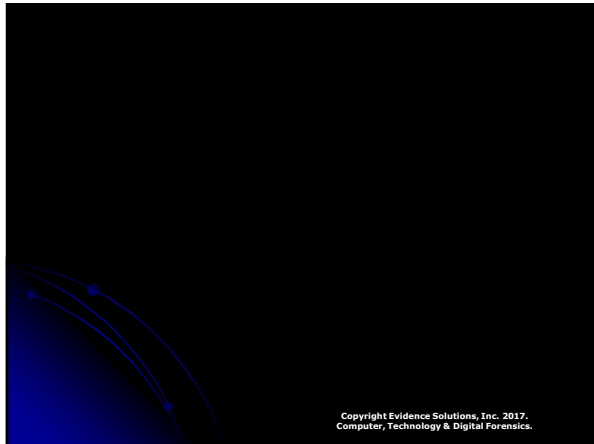
---

---

---

---

---



---

---

---

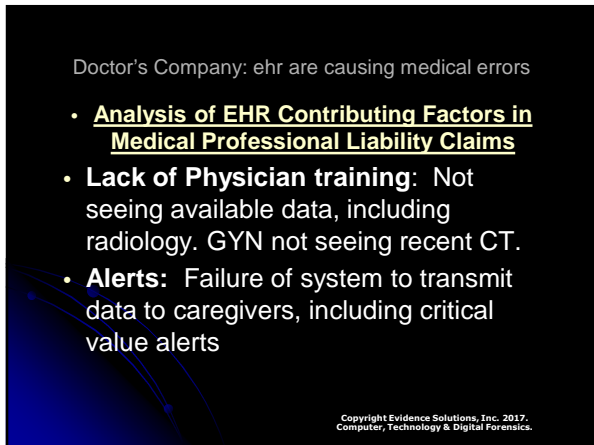
---

---

---

---

---



---

---

---

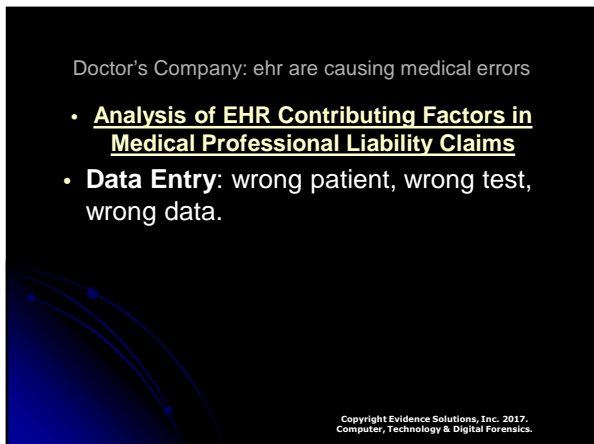
---

---

---

---

---



---

---

---

---

---

---

---

---



What to Ask For

- Meta Data
- Inside The System
- Outside The System

Hosted Locally  
Cloud Based

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---

Each System is Unique

- Data Dictionaries
- Exports of Data
- Reviewing Other Relevant Data – HIPAA Issues
- Copy and Paste
- Templates

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---

Manipulation

- Back Charting
- Changing Dates
- New Data Entered Later
- Editing of the Database

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

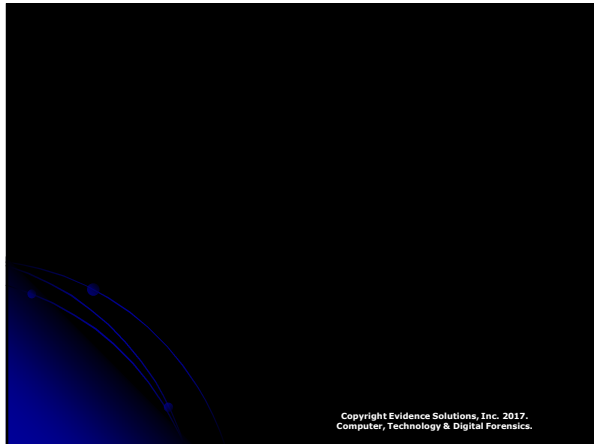
---

---

---

---

---



---

---

---

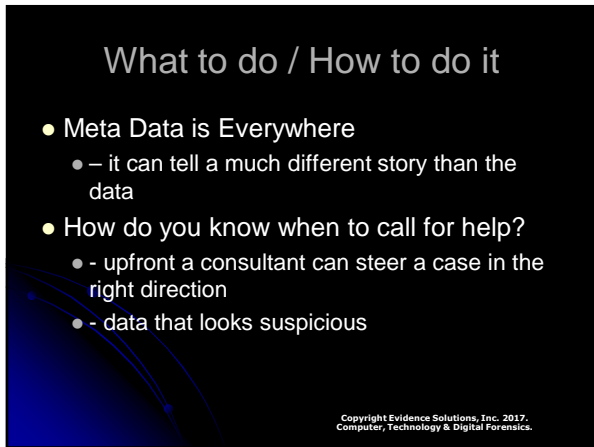
---

---

---

---

---



---

---

---

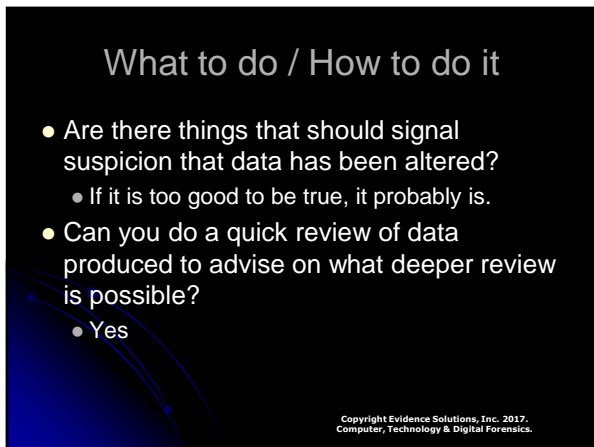
---

---

---

---

---



---

---

---

---

---

---

---

---

What to do / How to do it

- Do you have some practical tips for us in writing discovery requests?
  - Yes I have templates that can be used for all sorts of discovery requests

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---


---

---

---

---

**FINALLY GOT MY SINK FIXED**



Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---

Contact Information

Scott Greene  
of  
Evidence Solutions, Inc.  
866-795-7166  
Scott@EvidenceSolutions.com

Copyright Evidence Solutions, Inc. 2017.  
Computer, Technology & Digital Forensics.

---

---

---

---

---

---

---

---





Seminar Evaluation Form

Date: \_\_\_\_\_

	Poor	Ok	Good	Very Good	Excellent
1. Was the material informative?	1	2	3	4	5
2. Was the material easy to understand?	1	2	3	4	5
3. Was the material appropriate?	1	2	3	4	5
4. Was the material interesting?	1	2	3	4	5
5. Was the medium used to present this subject effective?	1	2	3	4	5
6. The material presented in the seminar will be of use to me.	1	2	3	4	5
7. The material presented was properly sequenced.	1	2	3	4	5
8. Was the speaker effective?	1	2	3	4	5
9. The seminar was well worth my time.	1	2	3	4	5
10. Have you relied on computer forensics in your previous experience?				YES _____	NO _____

12. General impression of material presented? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

13. Why did you attend this seminar today? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

14. Would you like someone to contact you about computer forensics? YES \_\_\_\_\_ NO \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Mailing Address: \_\_\_\_\_  
 (if different)

Email: \_\_\_\_\_

Phone: ( ) \_\_\_\_\_ Fax: ( ) \_\_\_\_\_

Comments may be used on EvidenceSolutions.com. Please let me know if you object.