Using “form to letter” functionality to improve clinical care and capture quality metrics for continuous improvement

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Sunnybrook Health Sciences Centre

OntarioMD

Empowered Practices. Enhanced Care.

Presenter Disclosure

- Faculty / Speaker's Name: Ilana Halperin MD - Assistant Professor, Clinician in Quality and Innovation, Department of Medicine, University of Toronto, OntarioMD Peer Leader, QHR Peer Leader

- Relationships with commercial interests:
  - Speakers Bureau/Honoraria: QHR Technologies Inc.

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Disclosure of Commercial Support

- This program has not received any financial or in-kind support from commercial entities

- Potential for conflict(s) of interest:
  - None

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Mitigating Potential Bias

- Accuro® EMR user - Working to build my knowledge of similar functionality in other EMRs to build on the work I am doing with QHR

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Objectives

- Review the role of the EMR in enabling point of care data collection
- Discuss the challenges of using EMR data for quality improvement
- Discuss the potential impact on future design for EMRs

EMR: Meaningful Use

Meaningful use is using certified electronic health record (EHR) technology to:

- Improve quality, safety, efficiency, and reduce health disparities.
- Engage patients and family.
- Improve care coordination, and population and public health.
- Maintain privacy and security of patient health information.

Sources of Data in the EMR

- Entered by clinician
- Flows into EMR

Clinician Entered Data

- **Real time**
- Free text, unstructured, **non-standardized**
- **Rapid data entry**
  - Templates, stamps, forms
- **Not good for large scale queries analytics or reporting**

Data Flows into EMR

- Consults notes
- **Labs**
  - **Inconsistent naming of labs tests**
  - **Requirement for linking**
- Hospital reports (diagnostic imagining, discharge summaries)
- Scanned documents

Aggregated Data Can Flow Out of EMR

- Extracted, cleaned, **standardized**
- Not real time
- **Requires extra resources**
- Can then provide feedback on provider and system level performance for **quality indicators.**

CPCSSN RCSSSP

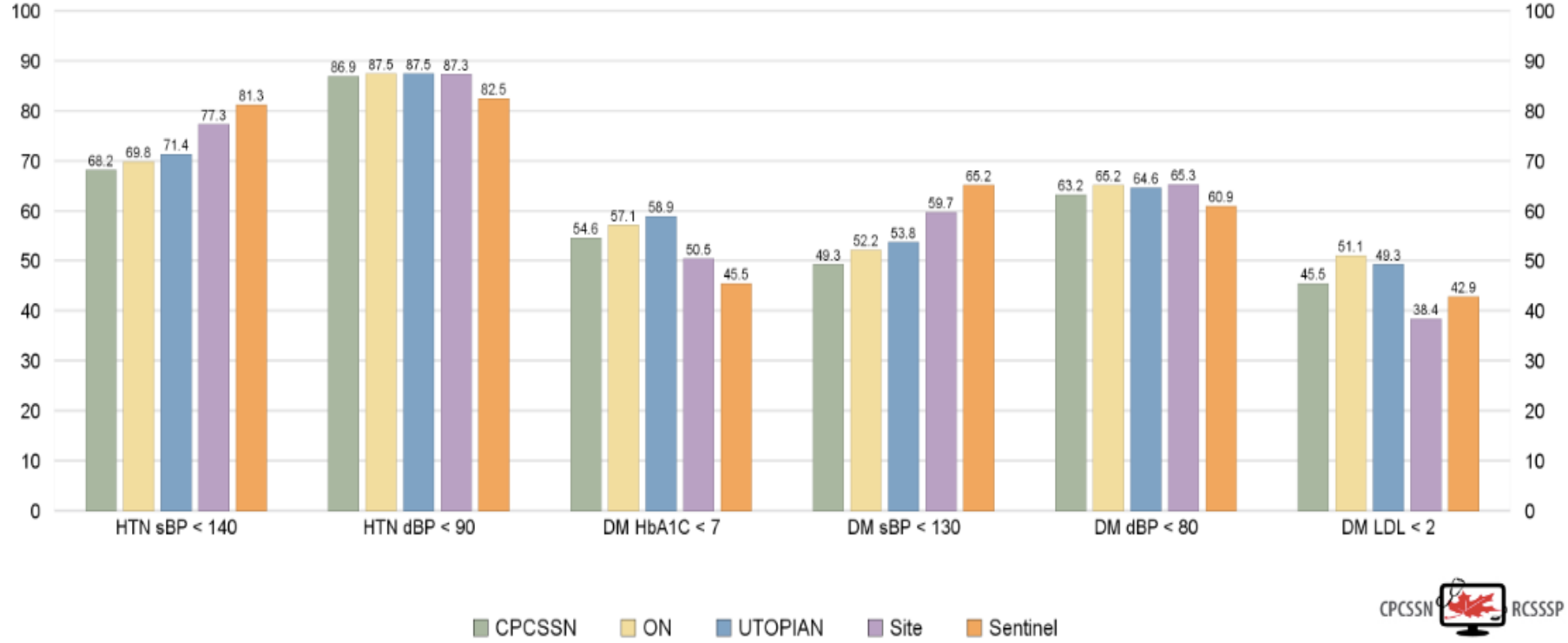
Canadian Primary Care Sentinel Surveillance Network
Réseau canadien de surveillance sentinelle en soins primaires

Network: **UTOPIAN**

Clinic ID: **34**

CPCSSN FEEDBACK REPORT: SENTINEL 00168

Data Up To: June 30, 2015



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Key Point-
Turning Data into Information

The biggest value of the EMR is not in the data you enter

But

the information you can retrieve from that data to help improve patient care

Jessica Widdifield, PhD

Tension Between Quality and Efficiency

- Quality indicators require standardized data to analyze
- Standardized data entry
  - clunky
  - time consuming
  - decrease efficiency
- Standardized tools vary across vendor

What if more granular data could be used for QI within the EMR without compromising efficiency???

Point of care standardized data entry from patients and providers

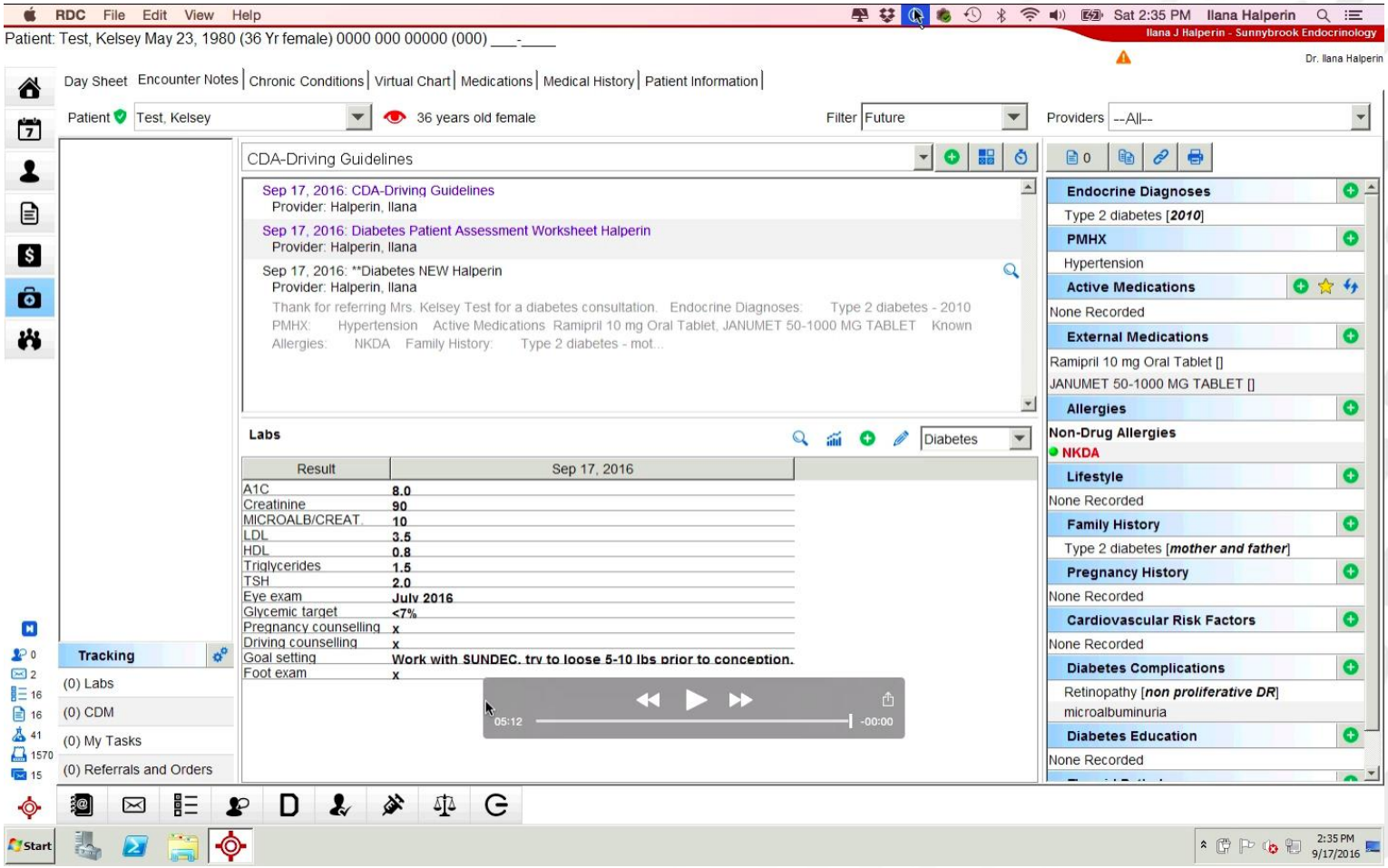
Output a completed clinical note or consult letter

Data continually added to a warehouse on the EMR server where reports can be run in real time

A Case

- 28 F referred for new diagnosis of Type 2 DM discovered in the context of an infertility work up
- PMHx: PCOS, HTN and obesity
- Meds: Janumet and Ramipril

QHR Accuro®
Form to Letter Solution



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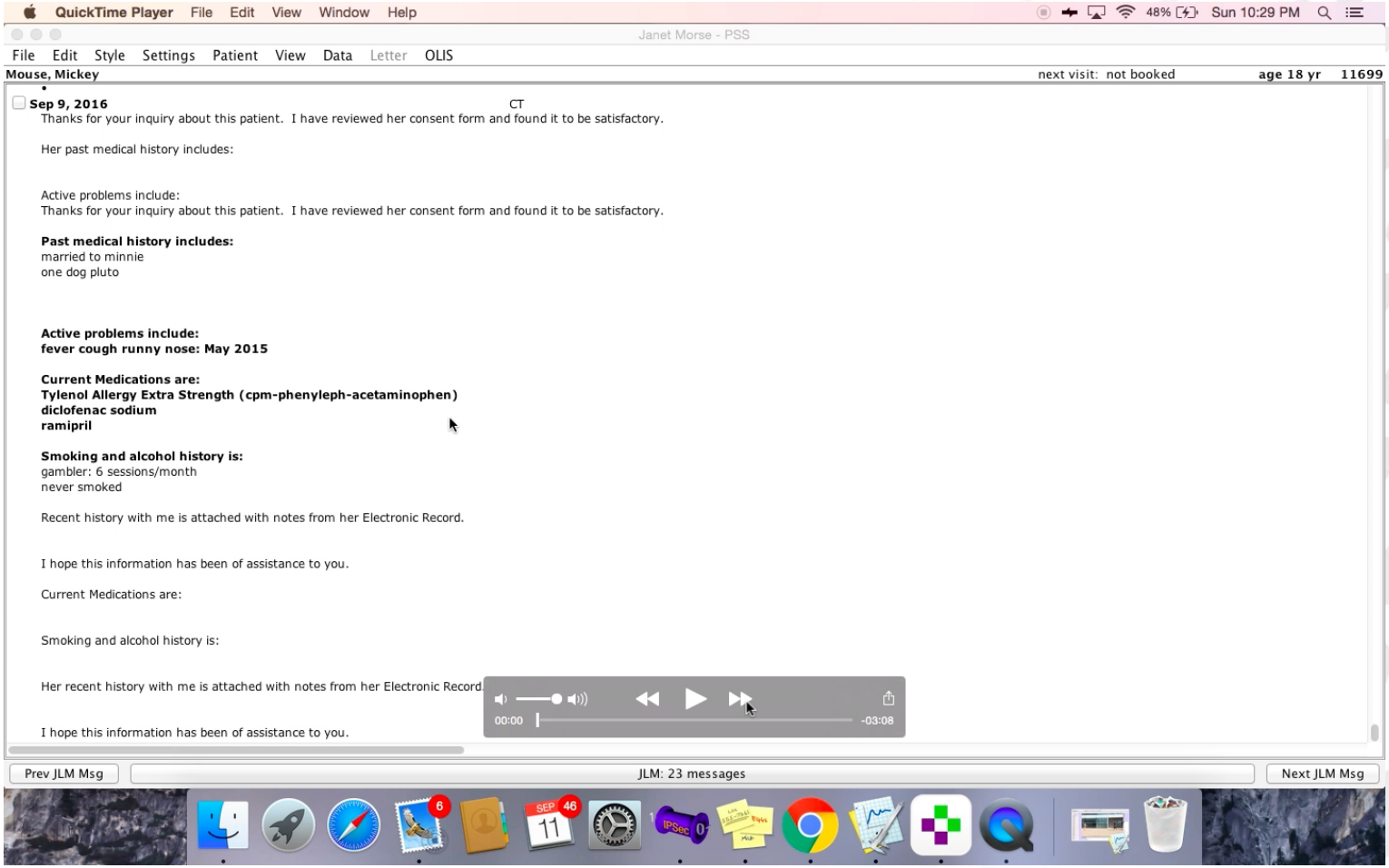
A Case

- 65 y.o F with Rheumatoid Arthritis
- Prednisone on and off for last 2 years
- BMD ordered by rheumatologist but requested that family MD follow up to determine need for osteoporosis therapy

Telus PS
Encounter Assistance Solution



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EA or FTL tools

PROS

- Efficient clinical notes
- Standardized data entry
- Decision support built in
- Customizable
- All tick boxes traceable for data aggregation

CONS

- Take time (and money) to build
- Decision support can become outdated
- Customizable

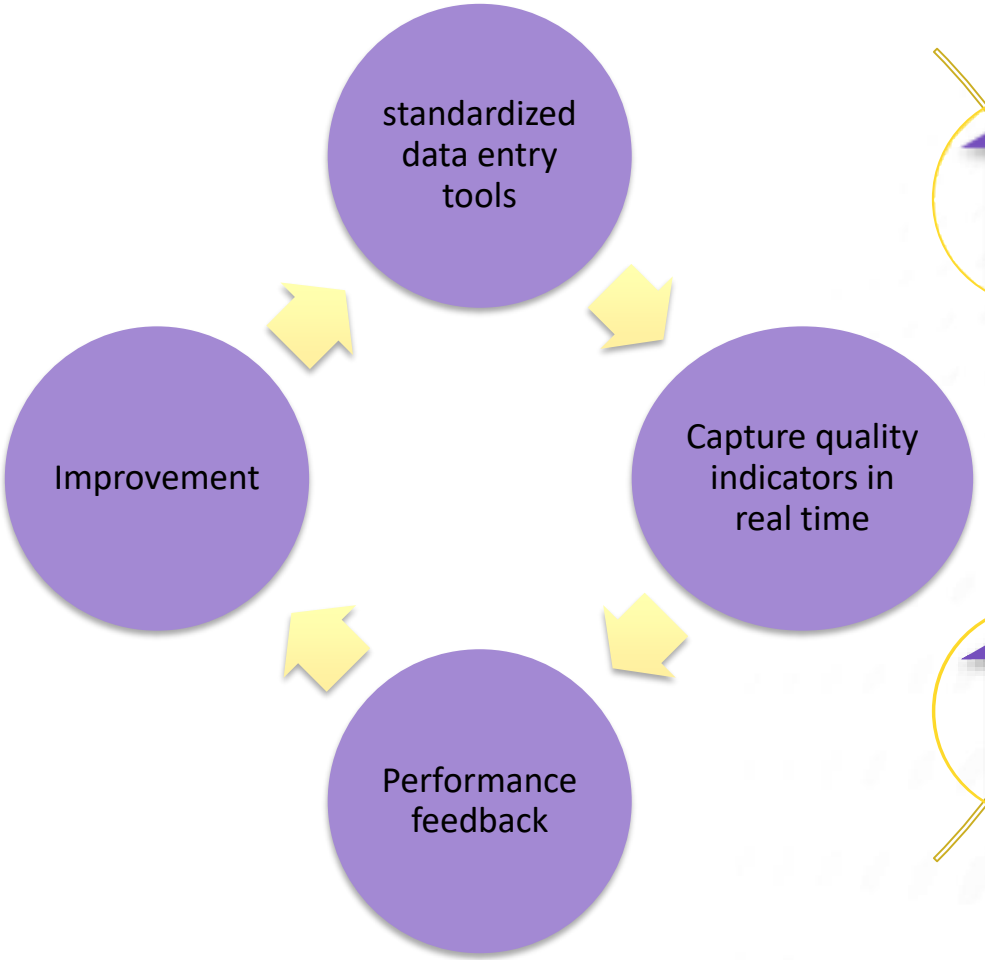
U of T Endocrinology - Diabetes Balanced Scorecard

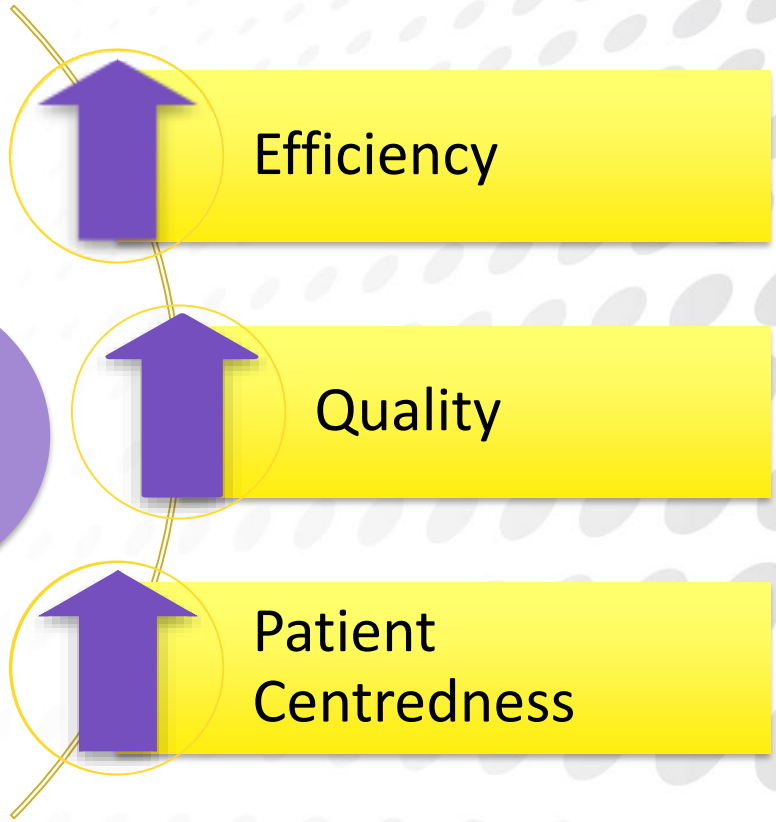
- 5 ambulatory diabetes programs
- Inter-professional modified Delphi panel
- 35 performance indicators across 6 domains of quality (safe, effective, efficient, timely, equitable, patient-centred)
- Designed FTL tool to capture the clinician entered data needed for indicators

New Data Solutions

- Query function with Accuro not robust enough
- Working with the QHR data development team on a new solution
- Data warehouse on the server
- User friendly tool for data analytics and ad hoc reporting

Future State





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Implications for the Future

- Design data capture tools that enable efficiency and clinical flow
- Build in reminders / decision support into the standardized tools
- Vendors and OntarioMD Practice Advisors need to work with front line clinicians to balance the tension between standardization and customization of EMR data fields.

Questions???

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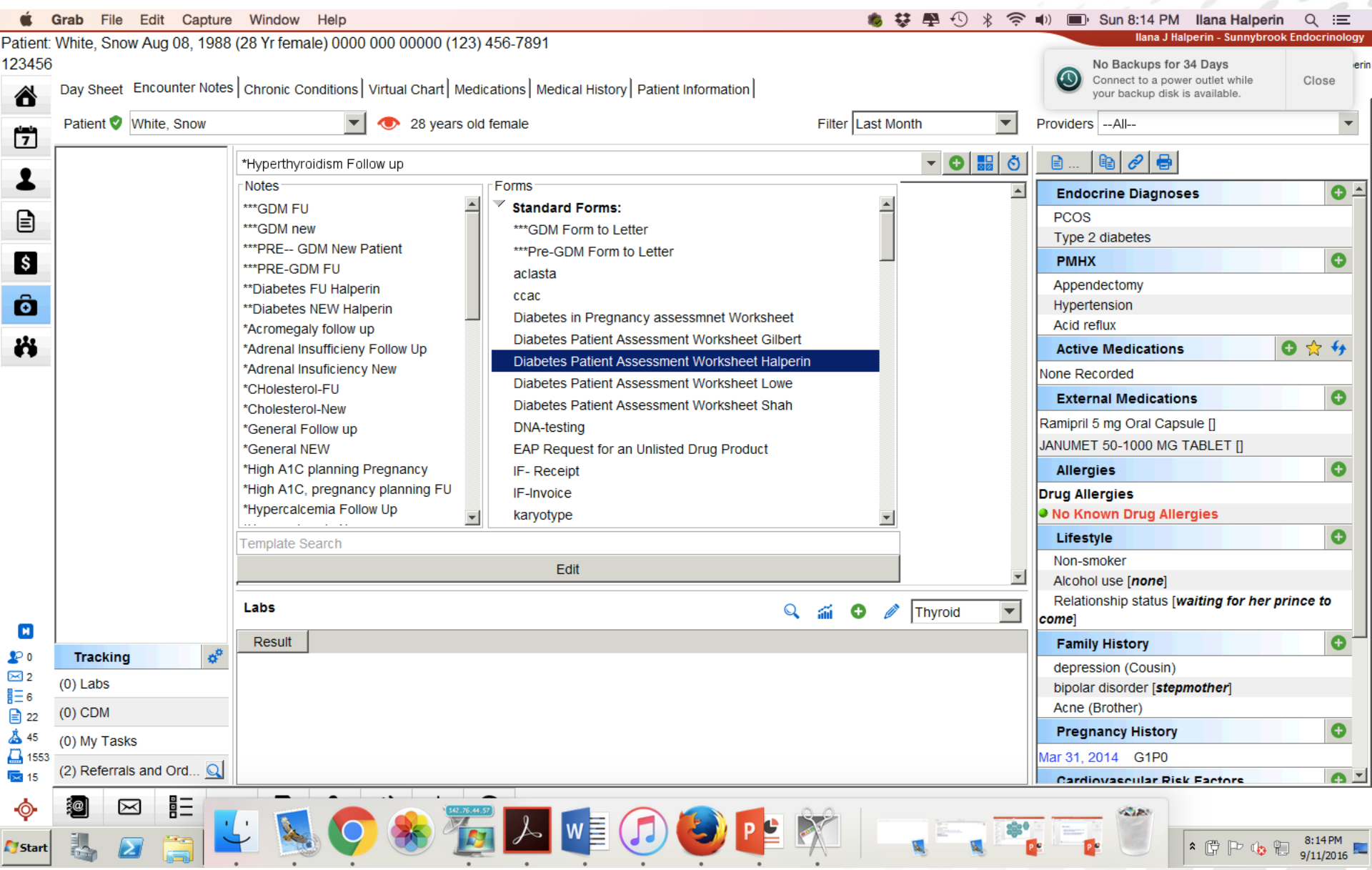
Grab File Edit Capture Window Help
Sun 8:14 PM Ilana Halperin
Ilana J Halperin - Sunnybrook Endocrinology
Patient: White, Snow Aug 08, 1988 (28 Yr female) 0000 000 00000 (123) 456-7891
123456
No Backups for 34 Days
Connect to a power outlet while your backup disk is available.
Close
Day Sheet
Encounter Notes
Chronic Conditions
Virtual Chart
Medications
Medical History
Patient Information
Patient
White, Snow
28 years old female
Filter
Last Month
Providers
--All--
*Hyperthyroidism Follow up
Notes
***GDM FU
***GDM new
***PRE-- GDM New Patient
***PRE-GDM FU
**Diabetes FU Halperin
**Diabetes NEW Halperin
*Acromegaly follow up
*Adrenal Insufficieny Follow Up
*Adrenal Insuficiency New
*CHolesterol-FU
*Cholesterol-New
*General Follow up
*General NEW
*High A1C planning Pregnancy
*High A1C, pregnancy planning FU
*Hypercalcemia Follow Up
Forms
Standard Forms:
***GDM Form to Letter
***Pre-GDM Form to Letter
aclasta
ccac
Diabetes in Pregnancy assessmnet Worksheet
Diabetes Patient Assessment Worksheet Gilbert
Diabetes Patient Assessment Worksheet Halperin
Diabetes Patient Assessment Worksheet Lowe
Diabetes Patient Assessment Worksheet Shah
DNA-testing
EAP Request for an Unlisted Drug Product
IF- Receipt
IF-Invoice
karyotype
Template Search
Edit
Labs
Thyroid
Result
Tracking
(0) Labs
(0) CDM
(0) My Tasks
(2) Referrals and Ord...
Endocrine Diagnoses
PCOS
Type 2 diabetes
PMHX
Appendectomy
Hypertension
Acid reflux
Active Medications
None Recorded
External Medications
Ramipril 5 mg Oral Capsule []
JANUMET 50-1000 MG TABLET []
Allergies
Drug Allergies
No Known Drug Allergies
Lifestyle
Non-smoker
Alcohol use [none]
Relationship status [waiting for her prince to come]
Family History
depression (Cousin)
bipolar disorder [stepmother]
Acne (Brother)
Pregnancy History
Mar 31, 2014 G1P0
Cardiovascular Risk Factors
Start
8:14 PM
9/11/2016

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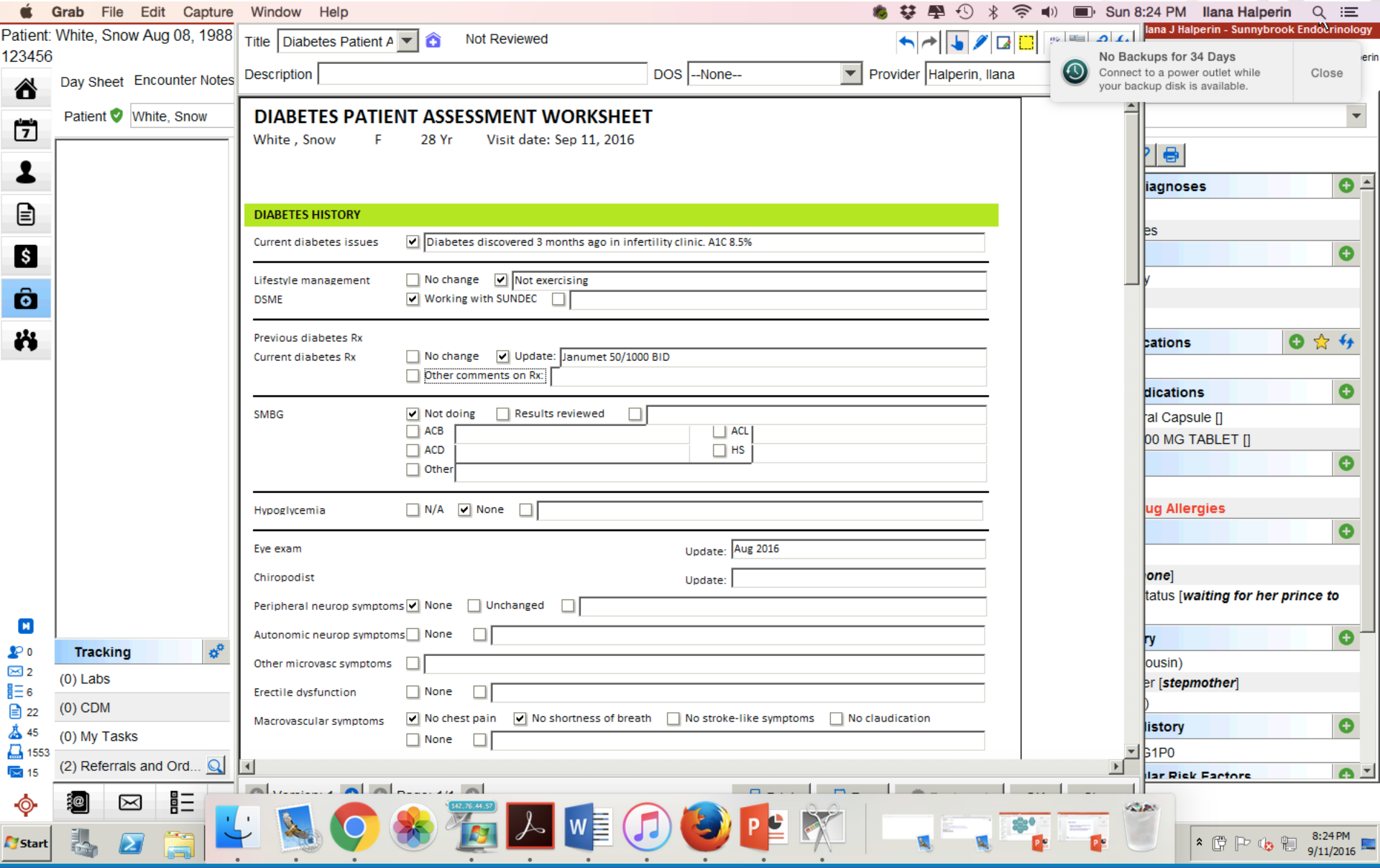
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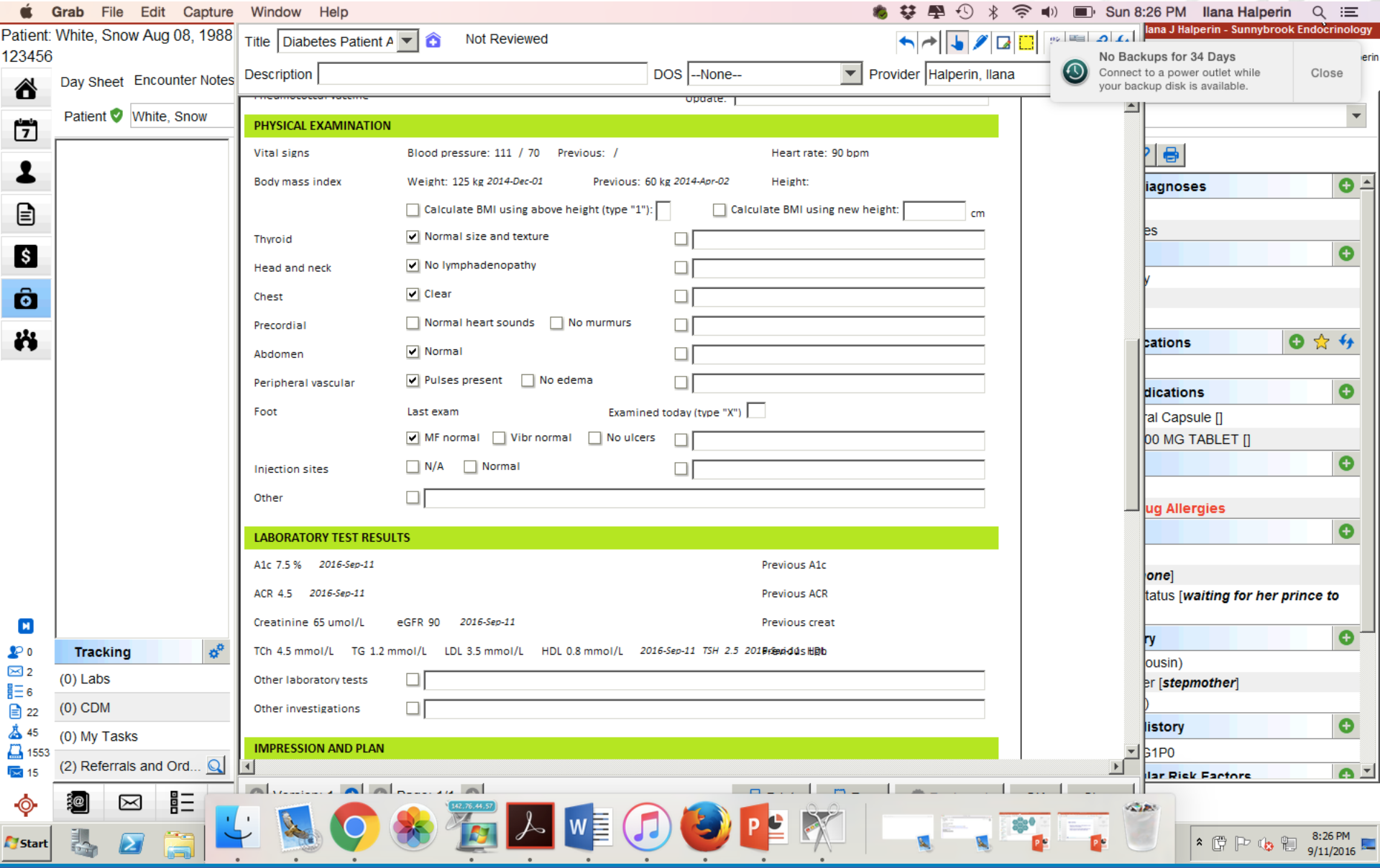
Sun 8:24 PM Ilana Halperin
Patient: White, Snow Aug 08, 1988
123456
Day Sheet Encounter Notes
Patient White, Snow
Title Diabetes Patient A
Not Reviewed
Description
DOS --None--
Provider Halperin, Ilana
No Backups for 34 Days
Connect to a power outlet while your backup disk is available.
Close
DIABETES PATIENT ASSESSMENT WORKSHEET
White , Snow F 28 Yr Visit date: Sep 11, 2016
DIABETES HISTORY
Current diabetes issues
Diabetes discovered 3 months ago in infertility clinic. A1C 8.5%
Lifestyle management
No change
Not exercising
DSME
Working with SUNDEC
Previous diabetes Rx
Current diabetes Rx
No change
Update:
Janumet 50/1000 BID
Other comments on Rx:
SMBG
Not doing
Results reviewed
ACB
ACD
Other
ACL
HS
Hypoglycemia
N/A
None
Eye exam
Update:
Aug 2016
Chiropodist
Update:
Peripheral neurop symptoms
None
Unchanged
Autonomic neurop symptoms
None
Other microvasc symptoms
Erectile dysfunction
None
Macrovascular symptoms
No chest pain
No shortness of breath
No stroke-like symptoms
No claudication
None
Tracking
(0) Labs
(0) CDM
(0) My Tasks
(2) Referrals and Ord...
Start
8:24 PM
9/11/2016

OntarioMD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Sun 8:26 PM Ilana Halperin
Patient: White, Snow Aug 08, 1988
123456
Day Sheet Encounter Notes
Patient White, Snow
Title Diabetes Patient A
Not Reviewed
Description
DOS --None--
Provider Halperin, Ilana
No Backups for 34 Days
Connect to a power outlet while your backup disk is available.
Close
PHYSICAL EXAMINATION
Vital signs
Blood pressure: 111 / 70
Previous: /
Heart rate: 90 bpm
Body mass index
Weight: 125 kg 2014-Dec-01
Previous: 60 kg 2014-Apr-02
Height:
Calculate BMI using above height (type "1"):
Calculate BMI using new height:
cm
Thyroid
Normal size and texture
Head and neck
No lymphadenopathy
Chest
Clear
Precordial
Normal heart sounds
No murmurs
Abdomen
Normal
Peripheral vascular
Pulses present
No edema
Foot
Last exam
Examined today (type "X")
MF normal
Vibr normal
No ulcers
Injection sites
N/A
Normal
Other
LABORATORY TEST RESULTS
A1c 7.5 %
2016-Sep-11
Previous A1c
ACR 4.5
2016-Sep-11
Previous ACR
Creatinine 65 umol/L
eGFR 90
2016-Sep-11
Previous creat
TCh 4.5 mmol/L
TG 1.2 mmol/L
LDL 3.5 mmol/L
HDL 0.8 mmol/L
2016-Sep-11
Other laboratory tests
Other investigations
IMPRESSION AND PLAN
Tracking
(0) Labs
(0) CDM
(0) My Tasks
(2) Referrals and Ord...
Start
8:26 PM
9/11/2016

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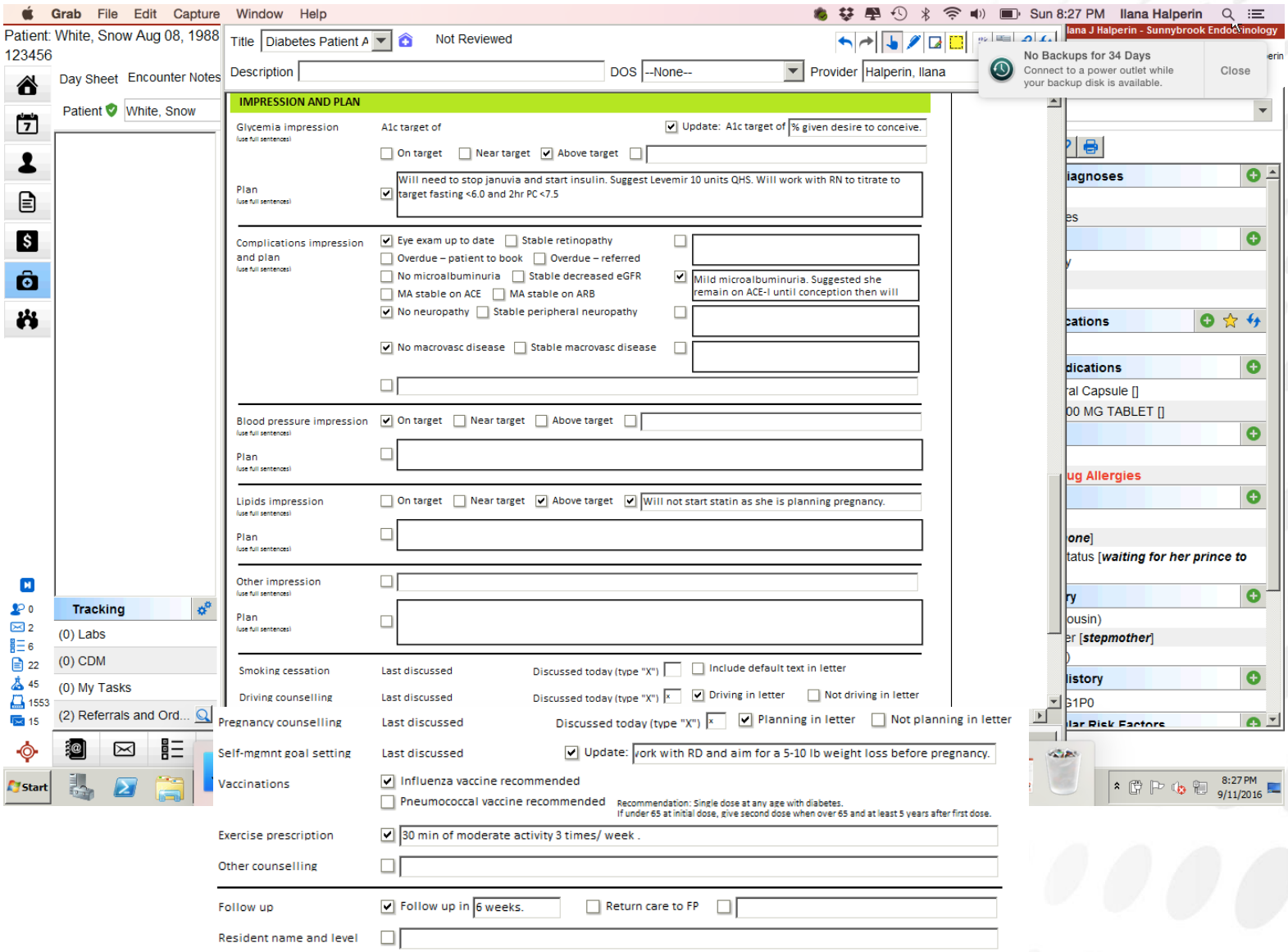
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Patient: White, Snow Aug 08, 1988
123456
Day Sheet Encounter Notes
Patient White, Snow
Title Diabetes Patient A
Not Reviewed
Description
DOS --None--
Provider Halperin, Ilana
Ilana J Halperin - Sunnybrook Endocrinology
No Backups for 34 Days
Connect to a power outlet while your backup disk is available.
Close
IMPRESSION AND PLAN
Glycemia impression
A1c target of
Update: A1c target of % given desire to conceive.
On target Near target Above target
Plan
Will need to stop januvia and start insulin. Suggest Levemir 10 units QHS. Will work with RN to titrate to target fasting <6.0 and 2hr PC <7.5
Complications impression and plan
Eye exam up to date Stable retinopathy
Overdue – patient to book Overdue – referred
No microalbuminuria Stable decreased eGFR
Mild microalbuminuria. Suggested she remain on ACE-I until conception then will
MA stable on ACE MA stable on ARB
No neuropathy Stable peripheral neuropathy
No macrovasc disease Stable macrovasc disease
Blood pressure impression
On target Near target Above target
Plan
Lipids impression
On target Near target Above target
Will not start statin as she is planning pregnancy.
Plan
Other impression
Plan
Smoking cessation
Last discussed
Discussed today (type "X")
Include default text in letter
Driving counselling
Last discussed
Discussed today (type "X")
Driving in letter
Not driving in letter
Pregnancy counselling
Last discussed
Discussed today (type "X")
Planning in letter
Not planning in letter
Self-mgmnt goal setting
Last discussed
Update: work with RD and aim for a 5-10 lb weight loss before pregnancy.
Vaccinations
Influenza vaccine recommended
Pneumococcal vaccine recommended
Recommendation: Single dose at any age with diabetes.
If under 65 at initial dose, give second dose when over 65 and at least 5 years after first dose.
Exercise prescription
30 min of moderate activity 3 times/ week .
Other counselling
Follow up
Follow up in 6 weeks.
Return care to FP
Resident name and level
Tracking
(0) Labs
(0) CDM
(0) My Tasks
(2) Referrals and Ord...
Start
8:27 PM
9/11/2016

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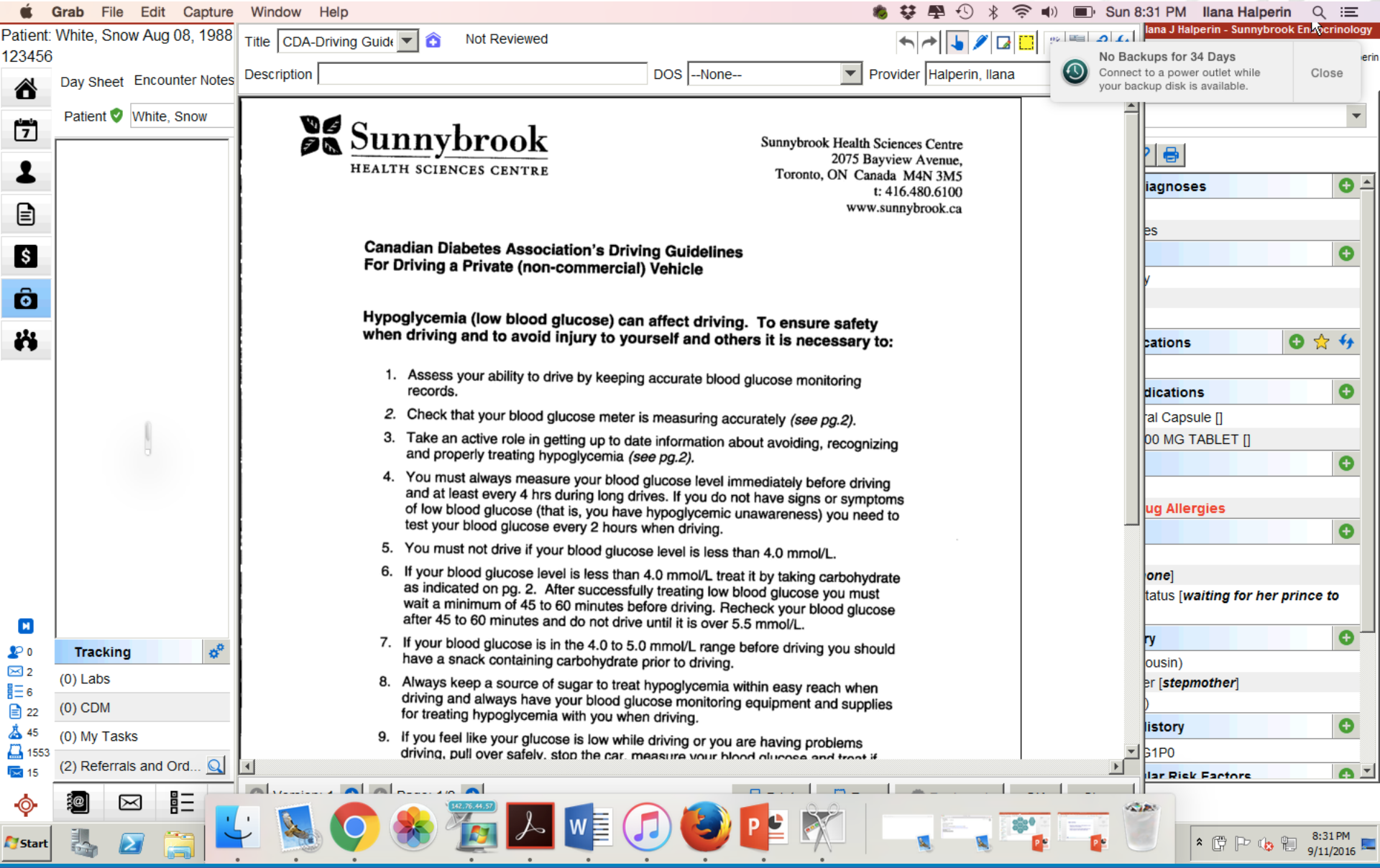
Grab File Edit Capture Window Help
Sun 8:31 PM Ilana Halperin
Patient: White, Snow Aug 08, 1988
123456
Day Sheet Encounter Notes
Patient White, Snow
Title CDA-Driving Guide
Not Reviewed
Description
DOS --None--
Provider Halperin, Ilana
No Backups for 34 Days
Connect to a power outlet while your backup disk is available.
Close
Sunnybrook
HEALTH SCIENCES CENTRE
Sunnybrook Health Sciences Centre
2075 Bayview Avenue,
Toronto, ON Canada M4N 3M5
t: 416.480.6100
www.sunnybrook.ca
Canadian Diabetes Association's Driving Guidelines
For Driving a Private (non-commercial) Vehicle
Hypoglycemia (low blood glucose) can affect driving. To ensure safety when driving and to avoid injury to yourself and others it is necessary to:
1. Assess your ability to drive by keeping accurate blood glucose monitoring records.
2. Check that your blood glucose meter is measuring accurately (see pg.2).
3. Take an active role in getting up to date information about avoiding, recognizing and properly treating hypoglycemia (see pg.2).
4. You must always measure your blood glucose level immediately before driving and at least every 4 hrs during long drives. If you do not have signs or symptoms of low blood glucose (that is, you have hypoglycemic unawareness) you need to test your blood glucose every 2 hours when driving.
5. You must not drive if your blood glucose level is less than 4.0 mmol/L.
6. If your blood glucose level is less than 4.0 mmol/L treat it by taking carbohydrate as indicated on pg. 2. After successfully treating low blood glucose you must wait a minimum of 45 to 60 minutes before driving. Recheck your blood glucose after 45 to 60 minutes and do not drive until it is over 5.5 mmol/L.
7. If your blood glucose is in the 4.0 to 5.0 mmol/L range before driving you should have a snack containing carbohydrate prior to driving.
8. Always keep a source of sugar to treat hypoglycemia within easy reach when driving and always have your blood glucose monitoring equipment and supplies for treating hypoglycemia with you when driving.
9. If you feel like your glucose is low while driving or you are having problems
Tracking
(0) Labs
(0) CDM
(0) My Tasks
(2) Referrals and Ord...
Start
8:31 PM
9/11/2016

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DIVISION OF ENDOCRINOLOGY & METABOLISM

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Toronto, ON Canada M4N 3M5
T: 416.480.6056
F: 416.480.5122
ilana.halperin@sunnybrook.ca
www.sunnybrook.ca

Sep 11, 2016

Dear Dr. Gregory House,

Re: White, Snow
21 Dwarves Cottage Way
Neverland, ON S1S 1S1
Home: (123) 456-7891, Cell: (000) 000-0000
DOB: Aug 08, 1988
HC: 0000 000 00000
MRN: 123456

Thank for referring Snow White for a diabetes consultation.

Endocrine Diagnoses:
PCOS
Type 2 diabetes

PMHX:
Appendectomy
Hypertension
Acid reflux

Active Medications
Ramipril 5 mg Oral Capsule, JANUMET 50-1000 MG TABLET

Known Allergies:
No Known Drug Allergies

Family History:
depression (Cousin)
bipolar disorder - stepmother
Acne (Brother)

Lifestyle Notes:
Non-smoker
Alcohol use - none
Relationship status - waiting for her prince to come

Glycemic Control:
Current issues: Diabetes discovered 3 months ago in infertility clinic. A1C 8.5%
Lifestyle management: Not exercising
She is working with the SUNDEC diabetes education team.
Current diabetes pharmacologic management: Janumet 50/1000 BID
She is not doing regular blood glucose self-monitoring.
She is not experiencing any hypoglycemia.

Complication Monitoring:
Eye examination: Aug 2016. She has no symptoms of peripheral neuropathy. She has no chest pain. She has no shortness of breath.

Physical examination
Blood pressure: 111/70 Heart rate: 90 bpm Weight: 125 kg
Thyroid had normal size and texture. There was no cervical lymphadenopathy. Chest was clear. Abdominal examination was unremarkable. Peripheral pulses were palpable. Monofilament sensation was normal.

Investigations
A1c: 7.5 % (Sep 11, 2016) Previous: ()
Albumin-creatinine ratio: 4.5 (Sep 11, 2016)
Creatinine: 65 umol/L eGFR: 90 (Sep 11, 2016)
Total chol: 4.5 mmol/L TG: 1.2 mmol/L LDL: 3.5 mmol/L HDL: 0.8 mmol/L (Sep 11, 2016) TSH: 2.5 Sep 11, 2016

Impression and plan

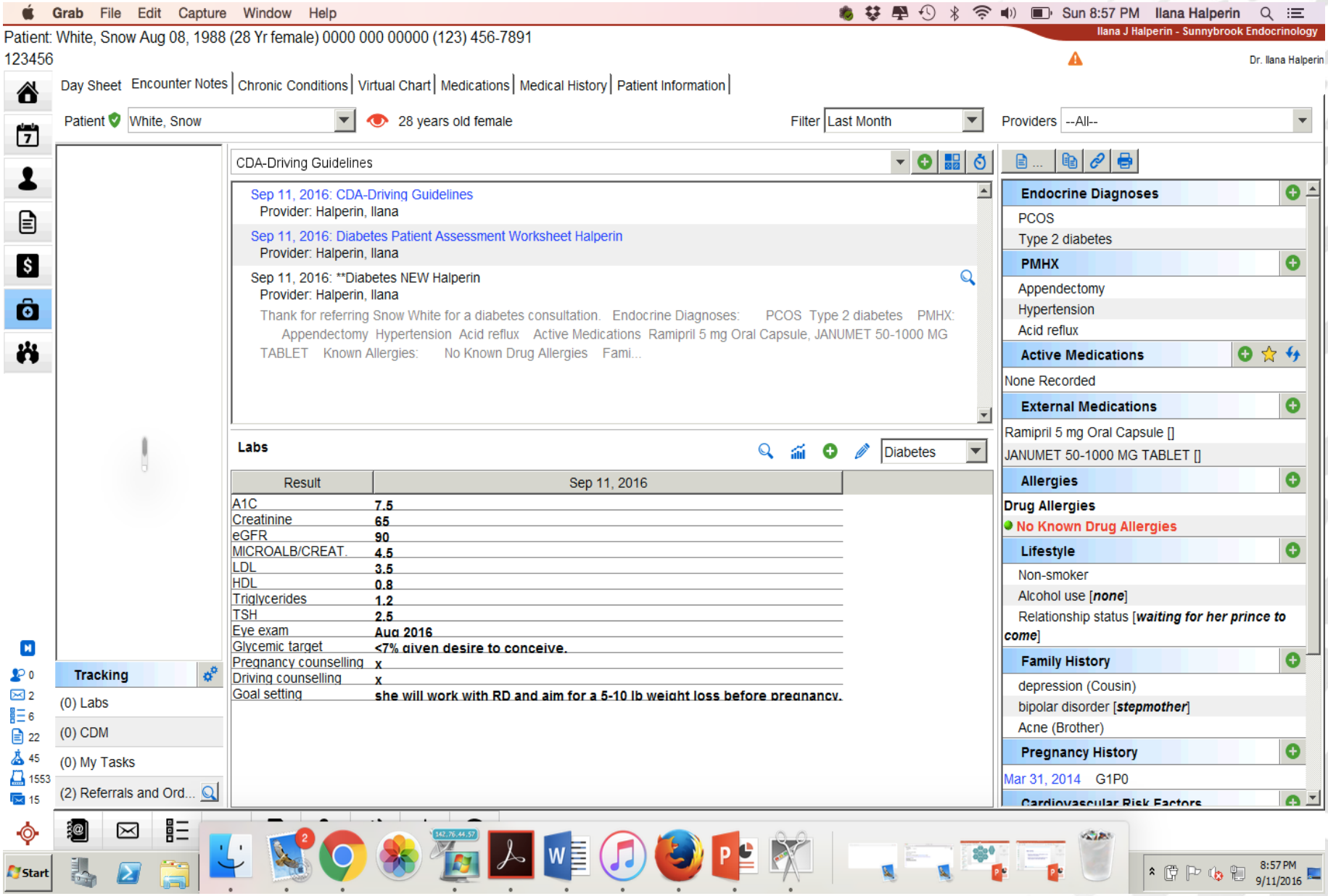
Glycemic Control: Her glycemic control target is an A1c of <7% given desire to conceive. Her glycemic control is above our target. Will need to stop januvia and start insulin. Suggest Levemir 10 units QHS. Will work with RN to titrate to target fasting <6.0 and 2hr PC <7.5

Complication Monitoring: Retinopathy screening is up-to-date. Nephropathy: : Mild microalbuminuria. Suggested she remain on ACE-I until conception then will have to switch to safer med for pregnancy. There is no neuropathy. There is no evidence of macrovascular disease.

Risk Factor Modification: Her blood pressure is below the target of 130/80. Her LDL is above the target of 2.0 mmol/L. Lipids: Will not start statin as she is planning pregnancy.

Other recommendations: We reviewed hypoglycemia avoidance while driving: specifically that blood sugar should be above 5 mmol/L to drive, and a fast-acting carbohydrate source and glucose meter should be kept in the car. I counselled her on the importance of achieving excellent glycemic control prior to becoming pregnant because of the risk of fetal anomalies in the first trimester and potential worsening of microvascular complications during pregnancy. We set a new self-management goal: she will work with RD and aim for a 5-10 lb weight loss before pregnancy. 30 min of moderate activity 3 times/ week . I recommend that she receive the influenza vaccine.

Follow up: She will return for follow-up in 6 weeks.


Grab File Edit Capture Window Help
Sun 8:57 PM Ilana Halperin
Ilana J Halperin - Sunnybrook Endocrinology
Patient: White, Snow Aug 08, 1988 (28 Yr female) 0000 000 00000 (123) 456-7891
123456
Dr. Ilana Halperin
Day Sheet Encounter Notes Chronic Conditions Virtual Chart Medications Medical History Patient Information
Patient White, Snow
28 years old female
Filter Last Month
Providers --All--
CDA-Driving Guidelines
Sep 11, 2016: CDA-Driving Guidelines
Provider: Halperin, Ilana
Sep 11, 2016: Diabetes Patient Assessment Worksheet Halperin
Provider: Halperin, Ilana
Sep 11, 2016: **Diabetes NEW Halperin
Provider: Halperin, Ilana
Thank for referring Snow White for a diabetes consultation. Endocrine Diagnoses: PCOS Type 2 diabetes PMHX: Appendectomy Hypertension Acid reflux Active Medications Ramipril 5 mg Oral Capsule, JANUMET 50-1000 MG TABLET Known Allergies: No Known Drug Allergies Fami...
Labs
Diabetes
Result
Sep 11, 2016
A1C 7.5
Creatinine 65
eGFR 90
MICROALB/CREAT. 4.5
LDL 3.5
HDL 0.8
Triglycerides 1.2
TSH 2.5
Eye exam Aug 2016
Glycemic target <7% given desire to conceive.
Pregnancy counselling x
Driving counselling x
Goal setting she will work with RD and aim for a 5-10 lb weight loss before pregnancy.
Endocrine Diagnoses
PCOS
Type 2 diabetes
PMHX
Appendectomy
Hypertension
Acid reflux
Active Medications
None Recorded
External Medications
Ramipril 5 mg Oral Capsule []
JANUMET 50-1000 MG TABLET []
Allergies
Drug Allergies
No Known Drug Allergies
Lifestyle
Non-smoker
Alcohol use [none]
Relationship status [waiting for her prince to come]
Family History
depression (Cousin)
bipolar disorder [stepmother]
Acne (Brother)
Pregnancy History
Mar 31, 2014 G1P0
Cardiovascular Risk Factors
Tracking
(0) Labs
(0) CDM
(0) My Tasks
(2) Referrals and Ord...
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8:57 PM
9/11/2016

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