Data Analytics

2023 Adventure in High Tech Program
Rotary Club of Nepean-Kanata

Deanna Rothwell
Director, Analytics
October 2023

About Me

- BSc Math / Economics
- MSc Statistics (1995)
- ICES (Toronto) ~10 yrs
- Ottawa Hospital ~15 yrs

My Team

Analytics Team

Total 17 FTEs

Deanna Rothwell
Director

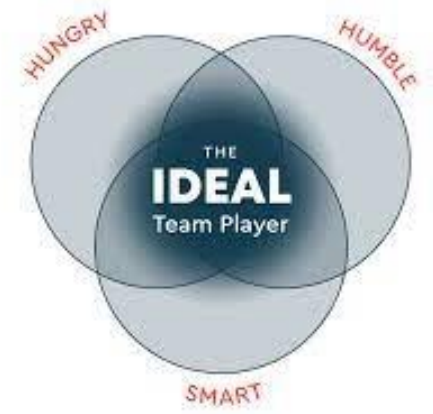
Erin McGeachie
Manager, Information Governance

- 5 FTEs
- Project coordination
- Education & Training

Amal Al Zayadi
Manager, Client Services

- 9 FTEs
- Data science
- Reporting solutions

Data Science Staff



- Programming skills
- Data management skills
- Problem solving
- Attention to detail
- Understanding of how data is created / nuances
- Curiosity!

Recent Posting

Basic Requirements:

- MSc in Public Health, Sociology, Statistics, Epidemiology, Health Sciences, or related field with coursework in research or survey design and methodology
- 1- 2 years of relevant experience using analytical techniques in a healthcare or human resources subject area
- Strong interpersonal, oral, and written communication skills
- Strong problem-solving and critical thinking skills
- Aptitude for research methodology and attention to detail
- Experience with statistical analysis tools
- Experience building reports and data visualizations using Excel and/or PowerBI
- Experience analyzing healthcare or other large data
- Comfortable learning and using technology, including Office365 products

The Ottawa Hospital

- One of Canada's largest academic health sciences centres
- 3-campus, 1400 inpatient beds
- Serves a catchment area of 1.2 million in Eastern Ontario, Canada and Nunavut

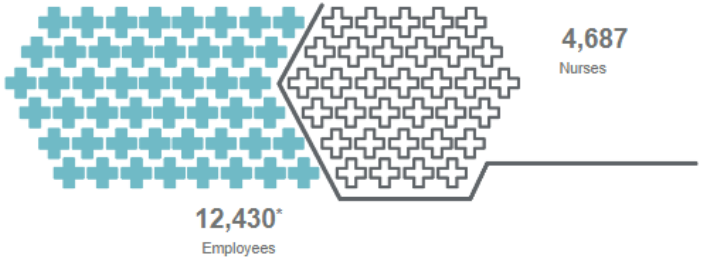
163,818
Emergency visits

994,658
Ambulatory care visits

70,042
Surgical cases

6,489
Babies delivered

Career Opportunities



4,687
Nurses

12,430*
Employees

1,431
Physicians

139
Fellows

1,102
Resident physicians

31
Midwives

615
Technicians and technologists

1,029
Allied health

202
Patient advisors

400
Volunteers

2,302
Researchers

655
Medical students

1,579
Nursing students

520
Students in other health professions

58
Students in non-health professions

110
Paramedic student placements

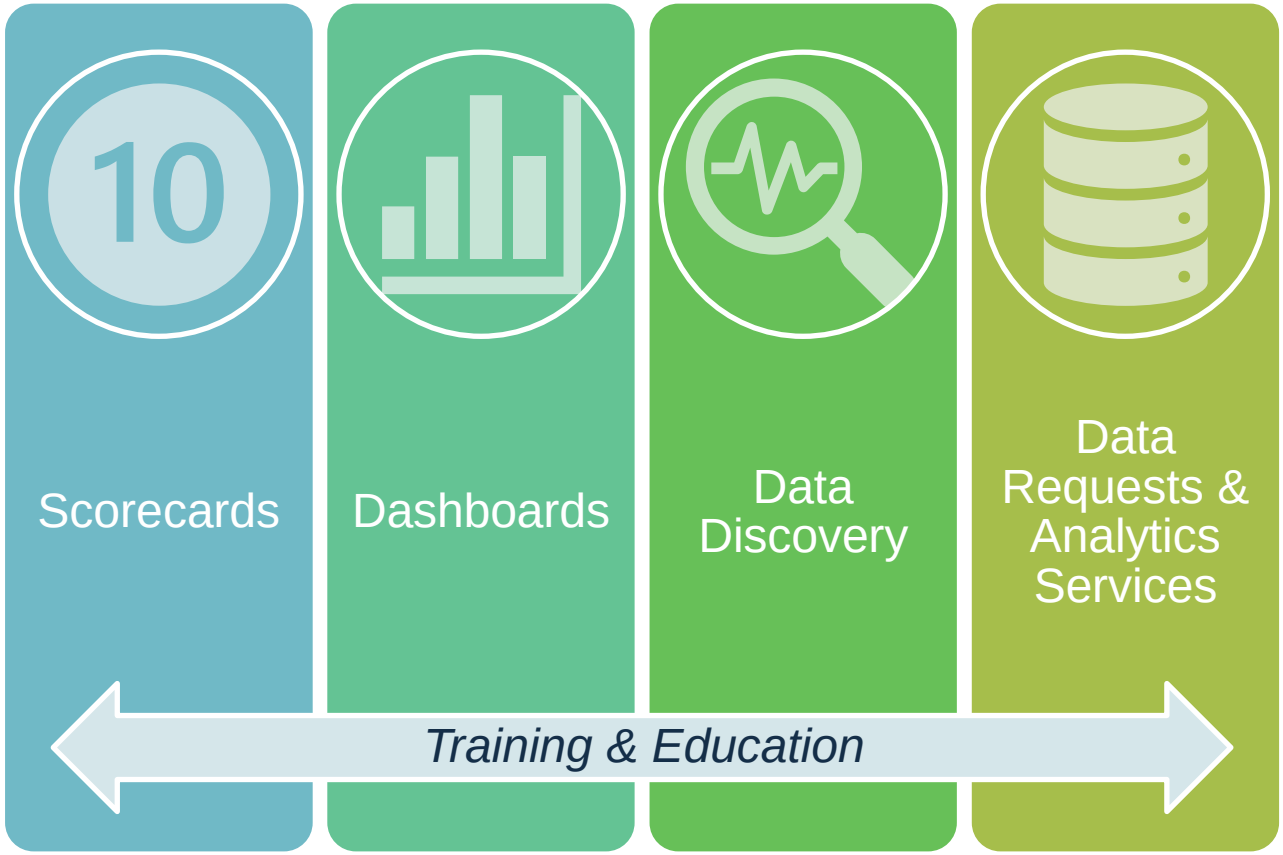
To provide each patient with the world-class care, exceptional service and compassion we would want for our loved ones

Analytics Mission

Provide data, analytical services, and education to support excellence in patient care, research, and innovation.

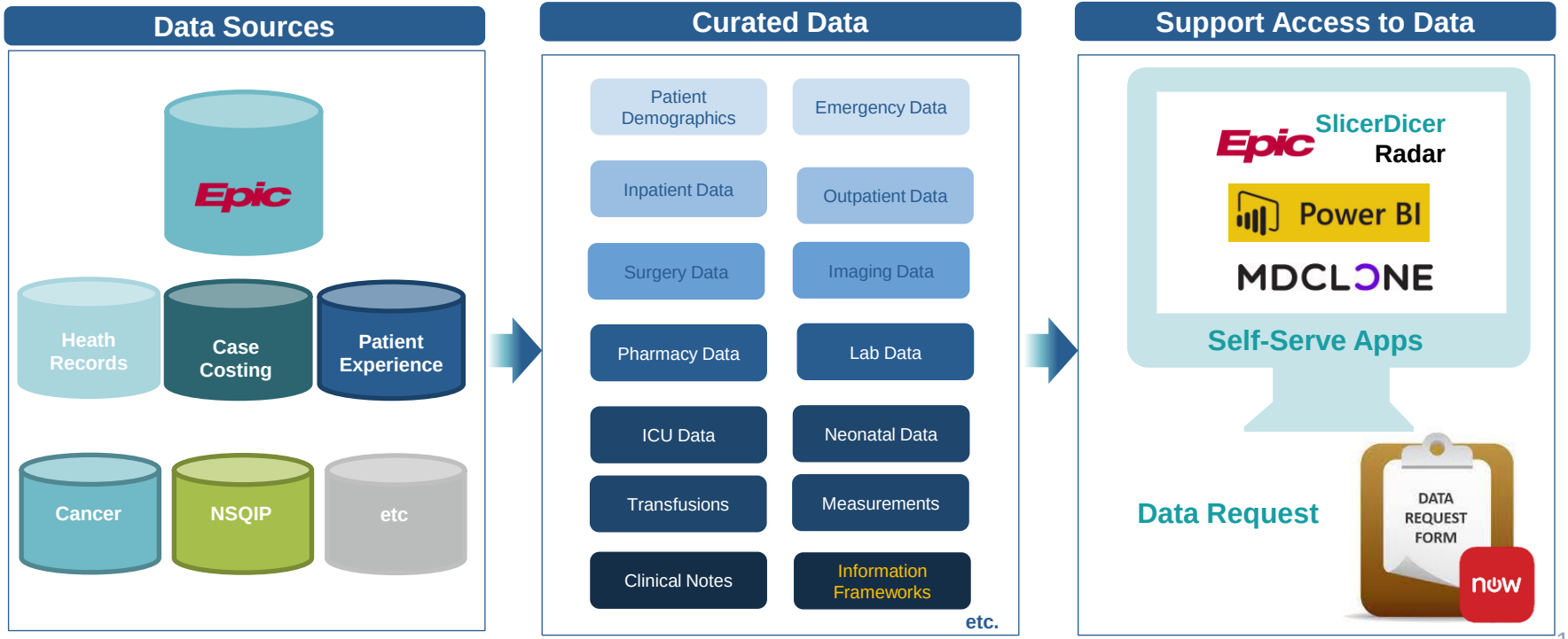
Working with Others

Spectrum of Services



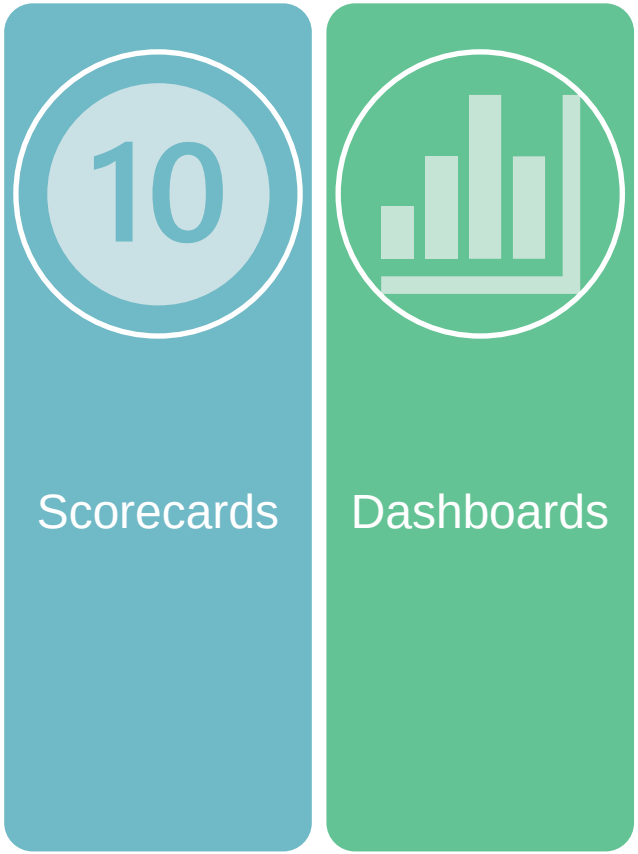
Clinical Data Pipeline

Create a single source of 'validated' clinical data for consistent, trusted, accessible data to support operations, research, and innovation



Tools

Spectrum of Services



- Leadership
- How am I performing?
- Any good / worrisome trends?
- 80-20 rule

Scorecards

- “Big dot” metrics for organization
- Ability to compare to other organizations

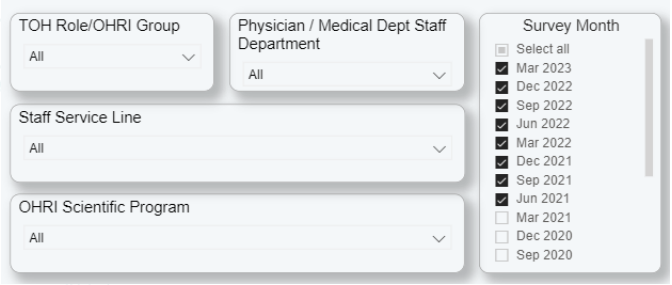
Scorecard: CPS 21-22 **Period :** 2021 Mar

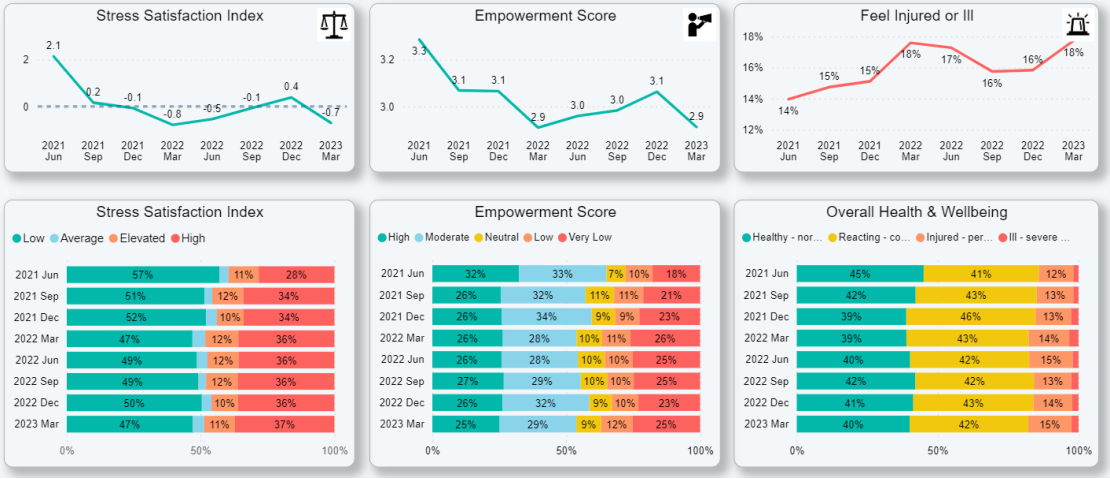
Strategic Aim	Indicator	Score	YTD	Baseline	Weight	Month	2-FY Trends
Better patient experience	Overall rating of experience - Inpt (% Top Box)	3	66.5	65.1	25%	Mar-22	
Better staff experience	Staff Stress Satisfaction Index	2	0.4	0.8	20%	Mar-22	
Better value	Total margin (%)	3	0.81	3.29	25%	Mar-22	
	HSMR - 2019 (ratio)	1	99.7	95.0	10%	Mar-22	
Improved population health	Readmissions - 30 day unplanned (%)	2	10.1	9.9	10%	Mar-22	
	ALC rate (% pt days)	2	21.2	20.6	10%	Mar-22	

Wellness Pulse Survey

Power BI

Dashboards

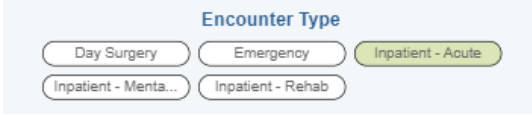




Dashboards

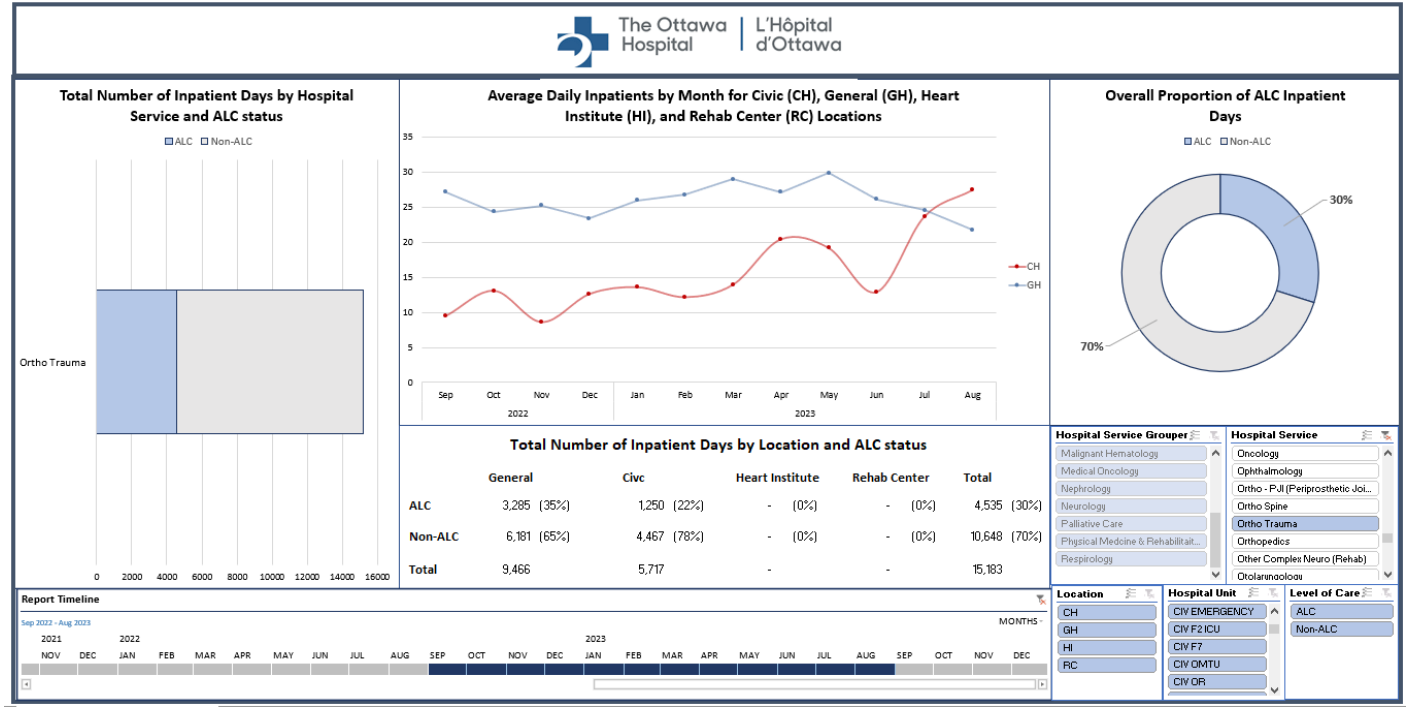
Costs & Volumes

Power BI



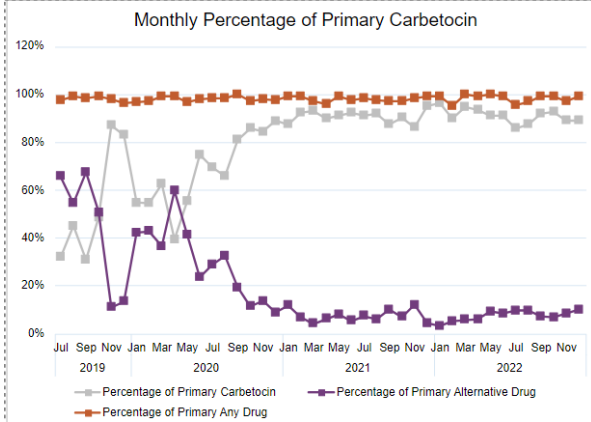
Do we need to change our staffing models? (patient flow analysis)

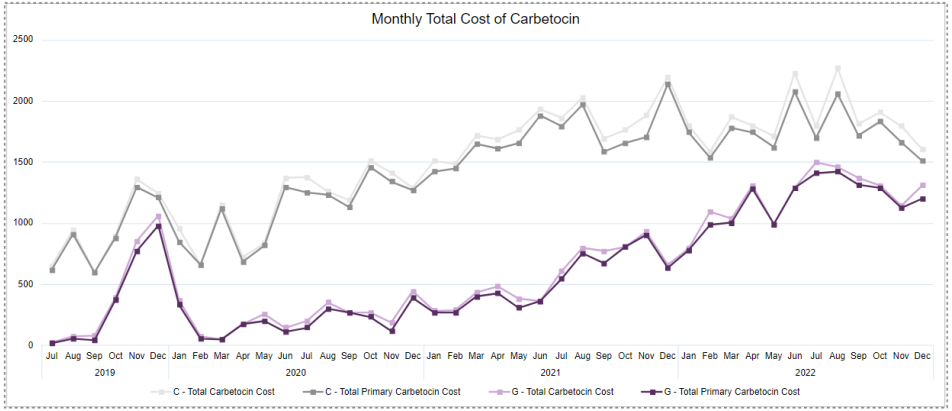
Data Requests & Analytics Services

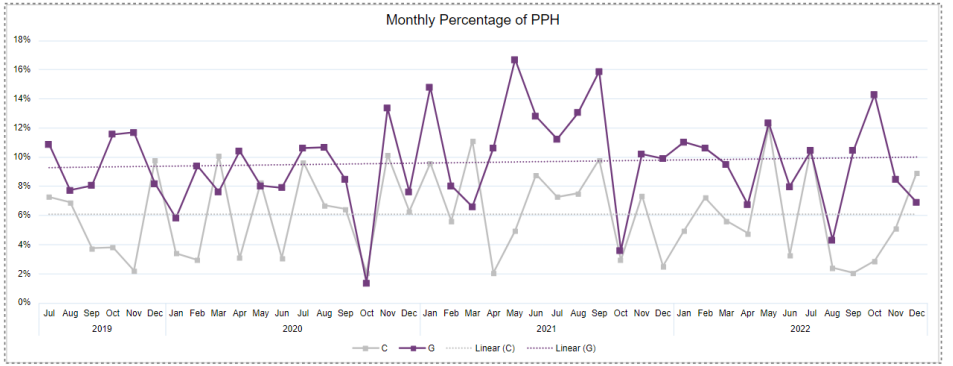


Does new costly drug reduce bleeding after c-sections?

Data Requests & Analytics Services







Challenge

- Increasing wait times
- Lack of data literacy
- Frustrations
- Not using data to drive decisions

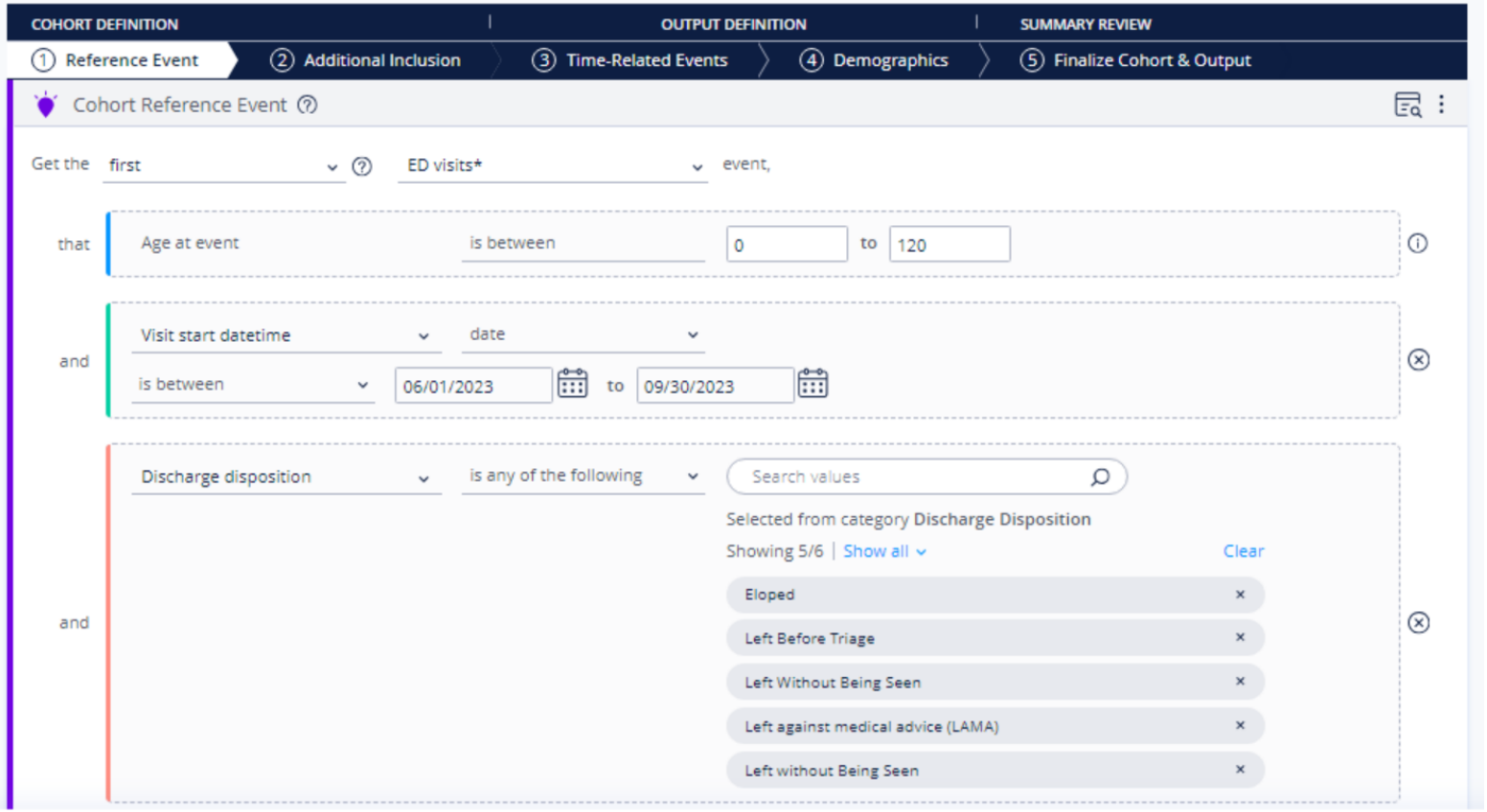
Submit a Data Request

Wait in queue for a Data Analyst

Consult with Analyst(s)

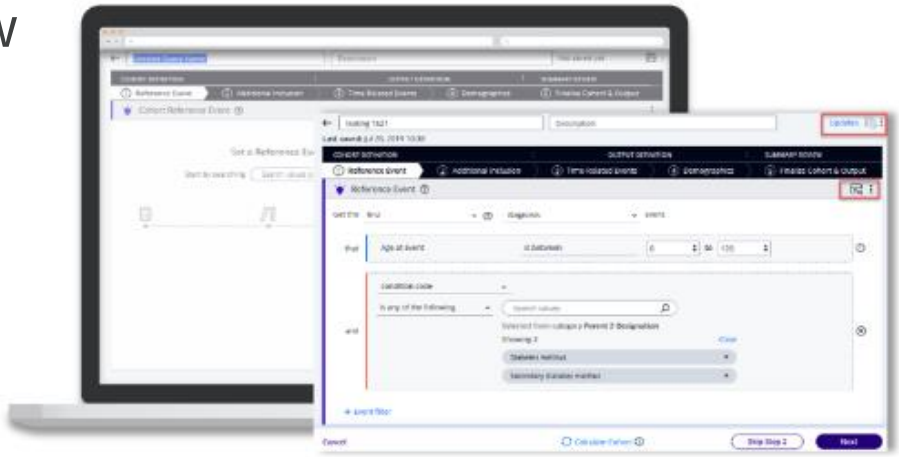
Data Democratization

Data Discovery



Self-Serve Platform

- Available all staff, physicians and researchers at TOH and OHRI
- Parameters easily modified by end user
- Analyses can be updated with new data on demand
- No programming skills required



Synthetic Data (Protecting patient privacy)

- Generated using artificial intelligence
- Non-reversible
- Maintains the patterns of the original data
- Not the same as “de-identification”

X Axis	Y Axis	R	G	B
1488	1061	0.78	0.80	0.83
93	184	0.71	0.83	0.84
810	222	0.83	0.89	0.88
460	70	0.84	0.88	0.88
82	1016	0.77	0.81	0.82
430	1112	0.80	0.84	0.85
62	861	0.78	0.82	0.83
114	562	0.77	0.82	0.82
664	711	0.75	0.72	0.63
637	665	0.42	0.35	0.22
1364	547	0.76	0.79	0.81
489	537	0.76	0.71	0.54
1446	997	0.80	0.82	0.84
293	474	0.77	0.81	0.82
339	1047	0.80	0.83	0.84
465	849	0.79	0.76	0.68
995	738	0.77	0.81	0.82
929	1088	0.79	0.82	0.84
274	582	0.75	0.74	0.65
1476	919	0.89	0.89	0.88
134	903	0.63	0.68	0.71

Synthetic Data

1488	1061	0.78	0.80	0.83
93	184	0.71	0.83	0.84
810	222	0.83	0.89	0.88
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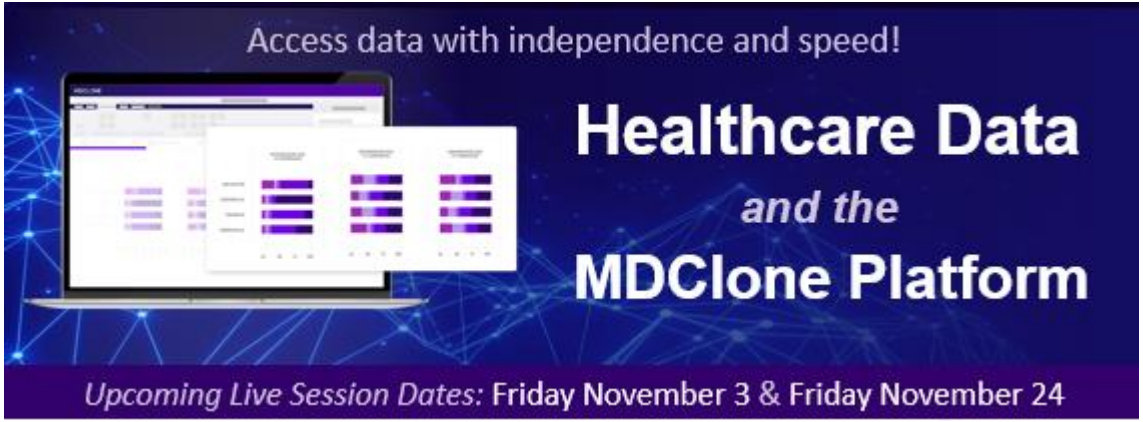
274	582	0.75	0.74	0.65
1476	919	0.89	0.89	0.88
134	903	0.63	0.68	0.71
1176	240	0.74	0.84	0.84
731	762	0.79	0.73	0.62
1667	211	0.87	0.91	0.91
804	5	0.73	0.84	0.85
1480	175	0.87	0.91	0.91
824	996	0.78	0.82	0.84
1192	1002	0.76	0.80	0.82
608	409	0.78	0.82	0.84
524	883	0.75	0.70	0.57
480	1094	0.81	0.84	0.85
1329	242	0.72	0.83	0.83
1621	816	0.78	0.80	0.81
415	294	0.77	0.85	0.84
937	345	0.81	0.85	0.83
301	789	0.84	0.78	0.63
100	823	0.79	0.82	0.84
1402	791	0.77	0.80	0.82
1025	1070	0.80	0.83	0.84
496	103	0.83	0.87	0.88
725	562	0.85	0.84	0.76
1423	296	0.73	0.84	0.84
1109	373	0.77	0.82	0.82
868	604	0.69	0.62	0.45
453	797	0.60	0.53	0.39
1451	404	0.77	0.80	0.82

Safe Sandbox

Benefits of Synthetic Data

- Safe sandbox
- Cannot identify patients
- Great learning platform
- Easier to share data externally
- Conclusions consistent with real data for both descriptive and complex statistical analyses

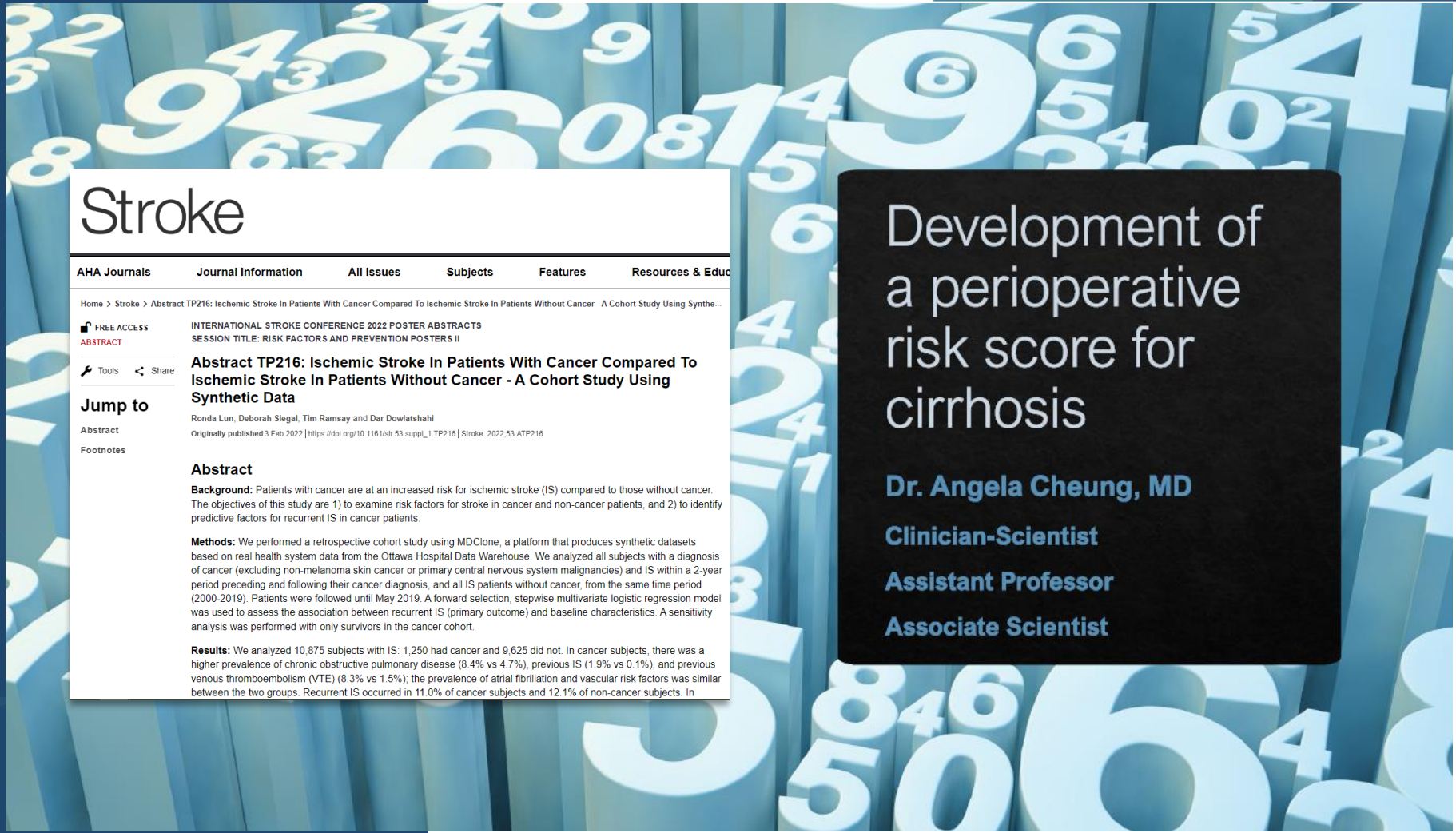
Launch of new platform



>300 Staff and Researchers certified users

> 20 Years of historical data available

>30% Requests diverted to self-serve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INTERNATIONAL STROKE CONFERENCE 2022 POSTER ABSTRACTS
SESSION TITLE: RISK FACTORS AND PREVENTION POSTERS II
Abstract TP216: Ischemic Stroke In Patients With Cancer Compared To Ischemic Stroke In Patients Without Cancer - A Cohort Study Using Synthetic Data
Ronda Lun, Deborah Siegal, Tim Ramsay and Dar Dowlatshahi
Originally published 3 Feb 2022 | https://doi.org/10.1161/str.53.suppl_1.TP216 | Stroke. 2022;53:ATP216
Abstract
Background: Patients with cancer are at an increased risk for ischemic stroke (IS) compared to those without cancer. The objectives of this study are 1) to examine risk factors for stroke in cancer and non-cancer patients, and 2) to identify predictive factors for recurrent IS in cancer patients.
Methods: We performed a retrospective cohort study using MDClone, a platform that produces synthetic datasets based on real health system data from the Ottawa Hospital Data Warehouse. We analyzed all subjects with a diagnosis of cancer (excluding non-melanoma skin cancer or primary central nervous system malignancies) and IS within a 2-year period preceding and following their cancer diagnosis, and all IS patients without cancer, from the same time period (2000-2019). Patients were followed until May 2019. A forward selection, stepwise multivariate logistic regression model was used to assess the association between recurrent IS (primary outcome) and baseline characteristics. A sensitivity analysis was performed with only survivors in the cancer cohort.
Results: We analyzed 10,875 subjects with IS: 1,250 had cancer and 9,625 did not. In cancer subjects, there was a higher prevalence of chronic obstructive pulmonary disease (8.4% vs 4.7%), previous IS (1.9% vs 0.1%), and previous venous thromboembolism (VTE) (8.3% vs 1.5%); the prevalence of atrial fibrillation and vascular risk factors was similar between the two groups. Recurrent IS occurred in 11.0% of cancer subjects and 12.1% of non-cancer subjects. In
Development of a perioperative risk score for cirrhosis
Dr. Angela Cheung, MD
Clinician-Scientist
Assistant Professor
Associate Scientist

Changing skillsets

Education & training

New tools

Business acumen (Not just technical skills)

What do I love about my job?

- Working on real-world problems
- Collaborating with a wide variety of different roles
- Working with a talented team
- Always learning!

Questions