

Automating Data Collection

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Two Projects

- ▶ Quality improvement project aimed at improving ward rounds on ICU
- ▶ Teaching feedback/attendance

Automating the boring stuff

- ▶ Can't always be there to record data myself
- ▶ Everyone has a mobile phone

Project 1 - Ward rounds!

- ▶ MDT ward rounds occurs every day
- ▶ Variable disciplines attending
- ▶ Who? When? How frequent?

Google Forms to the rescue

- ▶ Made a Google form
 - ▶ Automatic *data validation* so that no wrong entries or misspellings
 - ▶ Resizes automatically to the device (computer, iOS, Android)
 - ▶ Automatic date/time entry
- ▶ Imports straight into a spreadsheet
- ▶ Import that into R
- ▶ Analyse the data when I'm away

Google Forms

tps://docs.google.com/f

Ward Round Audit

Handover and ward-rounds are a crucial time for patients and their care. We are auditing to see how we can improve our ward-rounds.

***Required**

Consultant of the Day *

- ☐ Keays
- ☐ Hayes
- ☐ Singh
- ☐ Patel
- ☐ Vizcaychipi

Figure 1: Google Form on Android

Google Sheets

Ward Round Audit (Responses)												
Timestamp	A	B	C	D	E	F	G	H	I	J	K	L
1	Timestamp	Consultant of the Day	Handover Start-Time	Handover End-Time	Sufficient time for handov	Happiness with handover	Ward Round Start-Time	Ward Round End-Time	Patient List Updated?	Ward Round Style	Personale Present	Duty Per
2	21/12/2015 07:46:00	Haynes	07:45:00	08:22:00	yes	5	08:30:00	10:40:00	No	Walk	Whole	IN
3	05/04/2016 11:48:12	Voznytschij	07:50:00	08:25:00	Yes	4	08:25:00	09:45:00	Yes	Walk	Whole	IN
4	05/04/2016 09:07:43	Keays	07:50:00	08:10:00	Yes	3	08:30:00	09:00:00	Yes	Walk	Whole	IN
5	08/04/2016 10:36:47	Patel	08:00:00	08:30:00	Yes	5	08:00:00	09:30:00	No	Walk	Whole	IN
6	11/04/2016 10:39:13	Singh	07:45:00	08:10:00	Yes	5	08:15:00	10:00:00	No	Walk	Whole	IN
7	12/04/2016 10:32:01	Bhargh	08:30:00	08:14:00	Yes	4	08:30:00	10:30:00	Yes	Walk	Whole	IN
8	12/04/2016 14:08:00	Bhargh	08:00:00	08:10:00	Yes	5	08:30:00	11:40:00	Yes	Walk	Part	IN
9	13/04/2016 10:01:03	Voznytschij	07:45:00	08:17:00	Yes	5	08:20:00	10:00:00	Yes	Walk	Whole	IN
10	13/04/2016 20:18:00	Voznytschij	07:45:00	08:17:00	Yes	5	08:20:00	09:55:00	Yes	Walk	Part	IN
11	15/04/2016 11:48:45	Singh	07:50:00	08:25:00	Yes	5	08:35:00	11:50:00	Yes	Walk	Whole	IN
12	20/04/2016 11:07:11	Keays	07:40:00	08:10:00	Yes	4	08:12:00	10:02:00	Yes	Walk	Whole	IN
13	04/05/2016 10:17:11	Keays	07:45:00	08:08:00	Yes	5	08:20:00	10:10:00	Yes	Walk	Whole	IN
14	22/12/2015 07:43:00	Haynes	07:43:00	08:14:00	yes	5	08:21:00	10:00:00	Yes	Walk	Whole	No
15	23/12/2015 07:50:00	Bhargh	07:50:00	08:20:00	yes	5	08:30:00	10:30:00	Yes	Walk	Whole	IN
16	24/12/2015 08:30:00	Bhargh	08:30:00	08:30:00	yes	5	08:30:00	11:30:00	Yes	Desk	Part	No
17	26/12/2015 07:56:00	Saouan	07:50:00	08:20:00	yes	5	08:10:00	10:40:00	Yes	Walk	Whole	IN
18	26/12/2015 08:08:00	Saouan	08:00:00	08:30:00	yes	5	10:10:00	12:50:00	Yes	Walk	Whole	No
19	27/12/2015 08:00:00	Patel	08:00:00	08:35:00	yes	5	08:40:00	12:20:00	No	Walk	Whole	IN
20	29/12/2015 07:45:00	Voznytschij	07:40:00	08:03:00	yes	5	08:25:00	10:45:00	Yes	Walk	Whole	IN
21	30/12/2015 07:48:00	Voznytschij	07:45:00	08:23:00	yes	5	08:23:00	09:20:00	Yes	Walk	Whole	No
22	31/12/2015 08:04:00	Keays	08:04:00	08:38:00	yes	5	08:39:00	10:10:00	No	Walk	Whole	IN
23	04/01/2016 07:48:00	Patel	07:45:00	08:20:00	yes	5	08:20:00	09:30:00	Yes	Walk	Whole	IN
24	05/01/2016 07:58:00	Saouan	07:55:00	08:27:00	yes	5	08:27:00	09:30:00	Yes	Walk	Whole	IN
25	07/01/2016 07:56:00	Voznytschij	07:50:00	08:28:00	yes	5	08:25:00	10:30:00	No	Walk	Whole	No
26	08/01/2016 07:58:00	Patel	07:58:00	08:30:00	yes	5	08:30:00	09:55:00	Yes	Walk	Whole	IN
27	09/01/2016 08:00:00	Patel	08:00:00	08:35:00	yes	5	08:40:00	10:40:00	No	Walk	Whole	IN
28	13/01/2016 08:00:00	Patel	08:00:00	08:30:00	yes	5	08:40:00	09:40:00	Yes	Walk	Whole	IN
29	14/01/2016 07:50:00	Patel	07:50:00	08:15:00	yes	5	08:20:00	09:20:00	Yes	Walk	Whole	No
30	15/01/2016 07:58:00	Saouan	07:50:00	08:18:00	yes	5	08:30:00	09:00:00	Yes	Walk	Whole	IN
31	16/01/2016 07:40:00	Saouan	07:40:00	08:13:00	yes	5	08:14:00	09:00:00	Yes	Walk	Whole	IN
32	18/01/2016 07:48:00	Bhargh	07:45:00	08:15:00	yes	5	08:26:00	10:30:00	Yes	Walk	Whole	IN
33	18/01/2016 07:55:00	Bhargh	07:50:00	08:13:00	yes	5	08:26:00	10:30:00	Yes	Walk	Whole	IN
34	20/01/2016 07:55:00	Singh	07:55:00	08:15:00	yes	5	08:27:00	12:00:00	No	Walk	Part	IN
35	21/01/2016 07:48:00	Patel	07:45:00	08:20:00	yes	5	08:27:00	09:35:00	Yes	Walk	Part	IN
36	22/01/2016 07:48:00	Bhargh	07:45:00	08:28:00	yes	5	08:48:00	12:00:00	Yes	Walk	Whole	IN
37	25/01/2016 07:50:00	Haynes	07:50:00	08:25:00	yes	5	08:25:00	11:30:00	No	Walk	Whole	IN
38	28/01/2016 07:48:00	Bhargh	07:40:00	08:20:00	yes	5	08:29:00	11:00:00	Yes	Walk	Whole	No
39	01/02/2016 07:48:00	Keays	07:45:00	08:14:00	yes	5	08:14:00	09:30:00	Yes	Walk	Whole	IN
40	02/02/2016 07:56:00	Keays	07:55:00	08:25:00	yes	5	08:25:00	10:00:00	Yes	Walk	Part	No
41	04/02/2016 07:55:00	Haynes	08:25:00	08:25:00	yes	5	08:25:00	10:00:00	Yes	Walk	Whole	No
42	05/02/2016 07:50:00	Keays	07:50:00	08:17:00	yes	5	08:20:00	11:00:00	Yes	Walk	Whole	IN
43	06/02/2016 07:45:00	Patel	07:45:00	08:20:00	yes	5	08:20:00	10:30:00	Yes	Walk	Whole	IN
44	09/02/2016 07:48:00	Patel	07:45:00	08:14:00	yes	5	08:22:00	10:20:00	Yes	Walk	Whole	No
45	10/02/2016 07:48:00	Keays	07:45:00	08:15:00	yes	5	08:15:00	09:45:00	Yes	Walk	Whole	IN
46	11/02/2016 07:48:00	Keays	07:45:00	08:15:00	yes	5	08:15:00	09:45:00	Yes	Walk	Whole	IN
47	12/02/2016 07:56:00	Haynes	07:50:00	08:20:00	yes	5	08:30:00	09:20:00	No	Walk	Whole	IN
48	16/02/2016 07:56:00	Patel	07:50:00	08:10:00	yes	5	08:13:00	09:20:00	Yes	Walk	Whole	IN
49	17/02/2016 07:50:00	Patel	07:50:00	08:20:00	yes	5	08:20:00	10:20:00	Yes	Walk	Part	No
50	18/02/2016 07:50:00	Patel	07:50:00	08:05:00	yes	5	08:20:00	10:20:00	Yes	Walk	Whole	No
51	19/02/2016 07:45:00	Patel	07:40:00	07:55:00	yes	5	08:15:00	09:20:00	No	Walk	Whole	No
52	22/02/2016 07:48:00	Keays	07:45:00	08:08:00	yes	5	08:10:00	10:00:00	Yes	Walk	Whole	IN

Figure 2: Google Sheets Response

Analysis

- ▶ The Google Sheet was fed into an R script
- ▶ Performs some analysis
 - ▶ Ward round duration
 - ▶ Number of personelle
- ▶ Draws lovely graphs!

Graphs

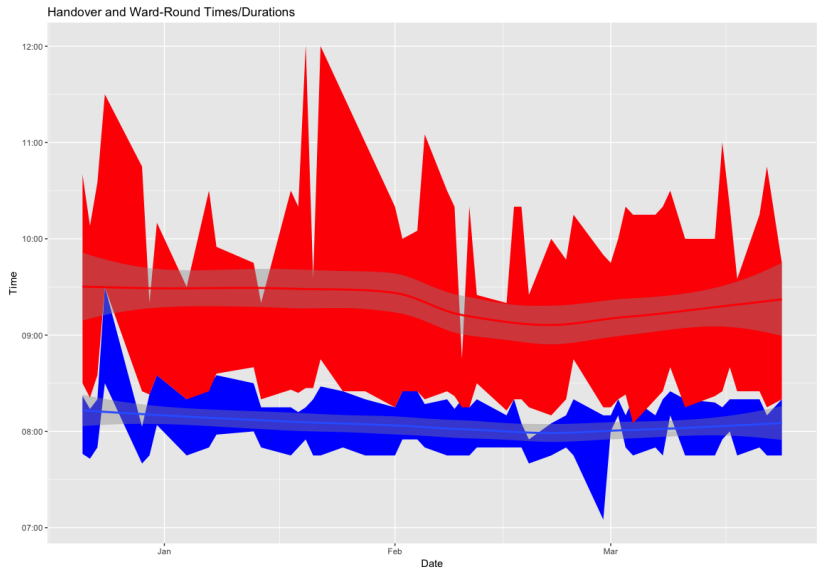


Figure 3: HO+WR Durations

Graphs

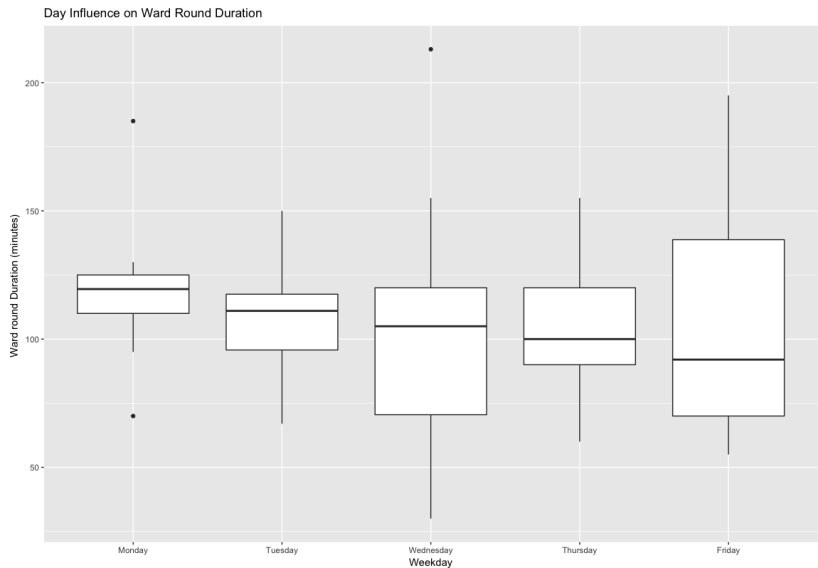


Figure 4: WR by Day

Lessons

- ▶ Little work at the beginning of the audit led to a dramatic reduction in ongoing effort
- ▶ Distributed Audit work
- ▶ All audits in Chelsea&Westminster ICU are now in this pipeline
- ▶ Future work is to provide a similar Google Forms/Sheets experience but for local secure storage to facilitate patient identifiable information

Project 2 - Teaching QIP

- ▶ Aimed at improving the quality of feedback and provide attendance certificates

Google Forms

- ▶ Uses google forms again for collection of data
- ▶ QR code at end of presentation sends attendees to form

Google Sheets

Teaching Feedback - Google | x Teaching Feedback (Responses) x

Secure | https://docs.google.com/spreadsheets/d/1dTs0tq54VNPmMg_PcNcDlqXCiK6pn8G3xp2TfG_RITa/edit#gid=2133865487

Teaching Feedback (Responses) | File Edit View Insert Format Data Tools Form Add-ons Help | All changes saved in Drive | chelwestcotbscare@gmail.com | Comments | Share

Early goal directed therapy

	A	B	C	D	E	F	G
1	Timestamp	Name of Teacher	Title of Teaching	Rate the Session	Freeform Feedback	Your Full Name	Date of Teaching
2	27/07/2017 13:57:04	Ahmed Al-Hindawi	Journal club	9	Great Journal review on elevation of systemic oxygen delivery in critically unwell patient	Kirat Panesar	20/07/2017
3	08/08/2017 13:57:22	Ahmed Al-Hindawi	Delirium: Educational Pack	9		Kai Koch	08/08/2017
4	08/08/2017 13:58:17	Ahmed Al-Hindawi	Delirium: Educational Pack	10	Very good	Josh Cuddihy	08/08/2017
5	08/08/2017 13:59:05	Ahmed Al-Hindawi	Delirium: Educational Pack	9	Thank you	Jagdish Sokhi	08/08/2017
6	08/08/2017 14:01:08	Ahmed Al-Hindawi	Delirium: Educational Pack	10		James White	08/08/2017
7	08/08/2017 14:02:09	Ahmed Al-Hindawi	Delirium: Educational Pack	10	Change the date format on the teaching feedback form	Karun Luthra	08/08/2017
8	08/08/2017 14:03:10	Ahmed Al-Hindawi	Delirium: Educational Pack	9	Crowd control required	Alice sisson	08/08/2017
9	08/08/2017 14:03:29	Ahmed Al-Hindawi	Delirium: Educational Pack	10	It was really useful. Well organised information. Many thanks!	Andrea Ximena Boedo	08/08/2017
10	08/08/2017 14:04:21	Ahmed Al-Hindawi	Delirium: Educational Pack	10	Very informative and interesting	Charlie Duffield	08/08/2017
11	10/08/2017 14:00:33	Ahmed Al-Hindawi	Delirium: Educational Pack	9		Kai Koch	08/08/2017
12	27/07/2017 13:51:08	Asako Shida	Journal Club: Burns Hype	10	Interesting article, enjoyed the discussion	Jenny Abthorpe	08/06/2017
13	31/07/2017 18:20:24	Asako Shida	Journal Club: Burns Hype	9		Joshua Davison	08/06/2017
14	17/08/2017 14:10:02	Charlie Prior	Journal club - post op deli	10	Very good!	Josh cuddihy	17/08/2017
15	17/08/2017 14:14:01	Charlie Prior	Journal club - post op deli	8		Nisha Bhudia	17/08/2017
16	23/08/2017 22:15:16	Charlie Prior	Journal club - post op deli	10		Andrea Boedo	17/08/2017
17	25/07/2017 15:13:15	Chris Lockie	Evidence for ECMO	9	Very informative, thank you.	Dominic Pitt	22/06/2017
18	25/07/2017 15:26:48	Chris Lockie	Evidence for ECMO	10	Excellent teaching session - interesting topic, discussed through cases and experience	Rachel Stewart	22/06/2017
19	27/07/2017 13:47:25	Chris Lockie	Evidence for ECMO	10	Great session. Interesting.	Jenny Abthorpe	22/06/2017
20	31/07/2017 14:49:22	Cortrak	Cortrak training	7	Thank you very much. Would be great to have some hands on teaching to become cor	Asako shida	31/07/2017
21	01/08/2017 16:58:22	Dominic Pitt	DNP	10	Incredibly interesting case presentation - well done! Topical. Excellent.	Linsey Christie	01/08/2017
22	01/08/2017 16:59:59	Dominic Pitt	DNP	10	Brilliant, interesting teaching on a case of DNP poisoning- really engaging and great to	Joshua Davison	01/08/2017
23	01/08/2017 17:02:58	Dominic Pitt	DNP	10	interesting topic, well presented	Rachel Stewart	01/08/2017
24	25/07/2017 15:35:23	Drew Dagens	Journal Club	10	Excellent presentation - clear background information and succinct summary of the arti	Rachel Stewart	04/07/2017
25	14/08/2017 13:37:02	James white	Weaning and extubation	10	Very knowledgeable and good teaching style.	Josh cuddihy	14/08/2017
26	14/08/2017 13:37:33	James White	Weaning and extubation	8		Kai Koch	14/08/2017
27	14/08/2017 17:00:42	James white	Weaning and extubation	9	Interesting study	Charlie Duffield	14/08/2017
28	14/08/2017 17:01:45	James White	Weaning and extubation	10	Excellent, clear explanation of a great project	Charlie Prior	14/08/2017
29					Very useful information on enteral feeding, at the appropriate level.		

+ | Form responses 1 | Explore

Figure 5: Google Sheet Responses_2

R script

- ▶ R script pulls in data
- ▶ Templates made for attendance and for feedback using RMarkdown
- ▶ Dplyr/stringr used for data manipulation/gathering
- ▶ Output into PDF
- ▶ Distributed by email

Generated Feedback Form

Individual Teaching Report

Intensive Care Unit - Chelsea & Westminster Hospital

30/07/2017

Dear Michelle Hayes

Thank you for presenting 'Early Optimisation in Critical Care - Rationale and Evidence' on June 13 2017.
Your median feedback score is 9.5/10 based on 4 attendees' feedback.

Comments

Really interesting teaching and discussion.

Very useful information. Using personal experience to aid teaching. Many thanks

Very interesting session

Great overview, fascinating and useful to critically analyze evidence

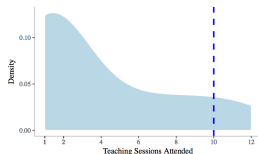
Figure 6: Feedback Form

Generated Attendance Reports

Attendance Report
Intensive Care Unit - Chelsea & Westminster Hospital
30/07/2017

Dear Dominic Pitt

Thank you for attending 10 teaching sessions and giving feedback. Your attendance compared to your colleagues is plotted below:



Sessions

Evidence for ECMO
Journal Club - Pancreatitis
Arterial lines
M&M Case Mr FD
Journal Club: Troponin paper
Pulmonary Hypertension
Antibiotics and antifungal
Early Optimisation in Critical Care - Rationale and Evidence
Legal Highs (SCRAs)
ICU & Elderly

Figure 7: Attendance Form

Lessons

- ▶ Must get people to fill in forms as quickly as possible
- ▶ Pipeline requires to manually run the script - working on a way to automating that
- ▶ Any suggestions?
- ▶ Possibility of emailing the feedback forms automatically