

An Audit on the compliance, acceptance and impact of the use of electronic documentation on patient admission – the eAdmit project

CT Lui

Associate Consultant

Accident and Emergency Department

NTWC

eAdmit workgroup

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NTWC IT: Michael Chung, CH Law, Wallace Cheng



eAdmit system

- A computerized system which function as “electronic secretary” to minimize doctors’ clerical work on patient admission
- 3 components
 - eDAVIT: patient management order
 - eMAR: medication prescription
 - eDecision: clinical decision support









**HOSPITAL AUTHORITY
New Territories West Cluster**

EMW

Integrated Treatment / Progress Notes

For Hospital Admitted Patient,
please use "HN" Label.
For AE/OP attendance, please use AE/OP Label
Name:
HKID:
HN/OP No.: AE111111111
Sex/D.O.B.:
Dept:
Hospital: * CPH / POH / SLH / TMH
* Pls circle as appropriate

Date/Time	Rank	please start here with treatment orders	(Each Entry Must Be Signed, Dated, Timed, Designated (Rank) and Name in Block Letter)	please start here with progress notes
2012/11/28	AC	1500 Cal, Low purine, Low salt diet IVF NS Q6h Fluid restriction 1L/day Fall precaution Suicidal precaution BP/P Q1h x 6 then Q4h if stable NO Q1h H'stix Q4h Blood x CBP+D/C, LRFT, CaPO4, RG, urate Physiotherapy +- ice therapy for pain relief O2 2L/min n.c. Back physiotherapy	NKDA [] CDDH / ePR printed [] Past relevant discharge summary printed Old medication: STOPPED New medication: NO Total no. of page: 8 (Progress Note, EMW cover page, Fluid sheet, Restrain form, Restrain factsheet, Psychi consult, Regular MAR X 1, Insulin X 1, [] Addition manual written sheet, no _____ Provisional Dx: Arthritis / joint pain Signature _____ C T LUI Dr, TMH Resident(A&E), A1582	

Regular		Regular		Regular		Regular		Regular		
NTWC Medication Administration Record (MAR) Regular Prescription and Administration Record (Chart A)										
Keys: HL - HOME LEAVE; W - WITHHELD; V - VOMITING; F - FASTING; R - PATIENT REFUSED										
Date	Dr's Sign. & Code	Drug Name	Route	Administration Use						
				Date	31/03	01/04	02/04	03/04	04/04	05/04
On 31/03/12	 A1582	Augmentin	PO							
Off		Dose: 1 g Frequency: BD								
On 31/03/12	 A1582	Amlodipine	PO							
Off		Dose: 10 mg Frequency: Daily								
On 31/03/12	 A1582	Digoxin	PO							
Off		Dose: 125 micrograms Frequency: Daily								
On 31/03/12	 A1582	Vitamin E	PO							
Off		Dose: 400 unit Frequency: daily								
On 31/03/12	 A1582	Gabapentin (Teva)	PO							
Off		Dose: 400 mg Frequency: tds								
On 31/03/12	 A1582	Cefotaxime	IV							
Off		Dose: 1 g Frequency: q 12 h								
On			Route							
Off		Dose	Frequency							

Gum label	Space for Drug Allergy Label	Body Weight :
	NKDA	Height : Sensitivity :

CMTLNT/201301502/NTWC MR

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**Daily IV Fluid & Drug Additives Prescription,
Administration and Intake / Output Chart**

Diagnosis: _____ BW (kg) : _____ Drug Allergy: (if any) _____ Remark: _____

Part A : IV Fluid Prescription and Discontinuation Recording – review on daily basis					
Date / Time	Dr's Sign. & code	Line type (Line 1/2/CVP)	IV Fluid +/- additive with rate /duration	Date / Time off	Sign.
28/11/12 03.03	A1582		IVF NS Q6h		

Part B : Administration / Intake						Output					
Date/Time	Description	IV Fluid ± Additive			Given/Checked by	Oral / Tube Feed Description	Amount (ml)	Amount (ml)			
		Line 1	Line 2	Line 3/ CVP				Drainage	Vomit/Aspiration	Urine	Faeces

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Psychiatric Consultation Form
Telephone: 2468-5417 / 6295
Fax: 2456-9118

From: Dr. C T LUI Dr, TMH Resident(A&E)
Department: A&E
POH / TMH (delete as appropriate)

Telephone: 24685752 Ward: C2
Date: 2012/11/28

- Please send the completed form via FAX at 2456-9118, an appointment will be made for this patient and the ward will be informed by phone.
- Please make sure the informant/relatives can be contacted by phone.
- In case of cancellation of consultation or need to change the appointment time, please let the psychiatrist know immediately at 2468-5417 / 6295.
- For TMH Urgent consultation, would the case medical officer please contact our associate consultant for arrangement.

Alcohol (*ad-hoc service*), Substance abuse (*ad-hoc service*), Child/Adolescent (*Mon, Wed & Fri service to 17-year-old or below*), EASY (*ad-hoc service to first onset psychosis*), General Adult CCDS (antenatal or postnatal within one year (either new to mental health services or defaulted psy follow up for 2 years))

Reason for psychiatric consultation (for suicide case, method and amount if DO): _____

Unstable emotion
Depressed mood
Deliberate Self harm:

Known Psychiatric Diagnosis: Depression
Instead of consultation service, can this case be referred to Psychiatric OPD for assessment? If not, please state reason: unstable mental condition
For Guardianship Order Application: Yes, Reason : _____
Current physical problems: _____

For Official Use:
Date Received:
Appointment Date:
Seen by Dr.
Cancelled Date: _____ and
Reason:

(Dr. C T LUI Dr, TMH Resident(A&E)

Psychiatric Consultation Form

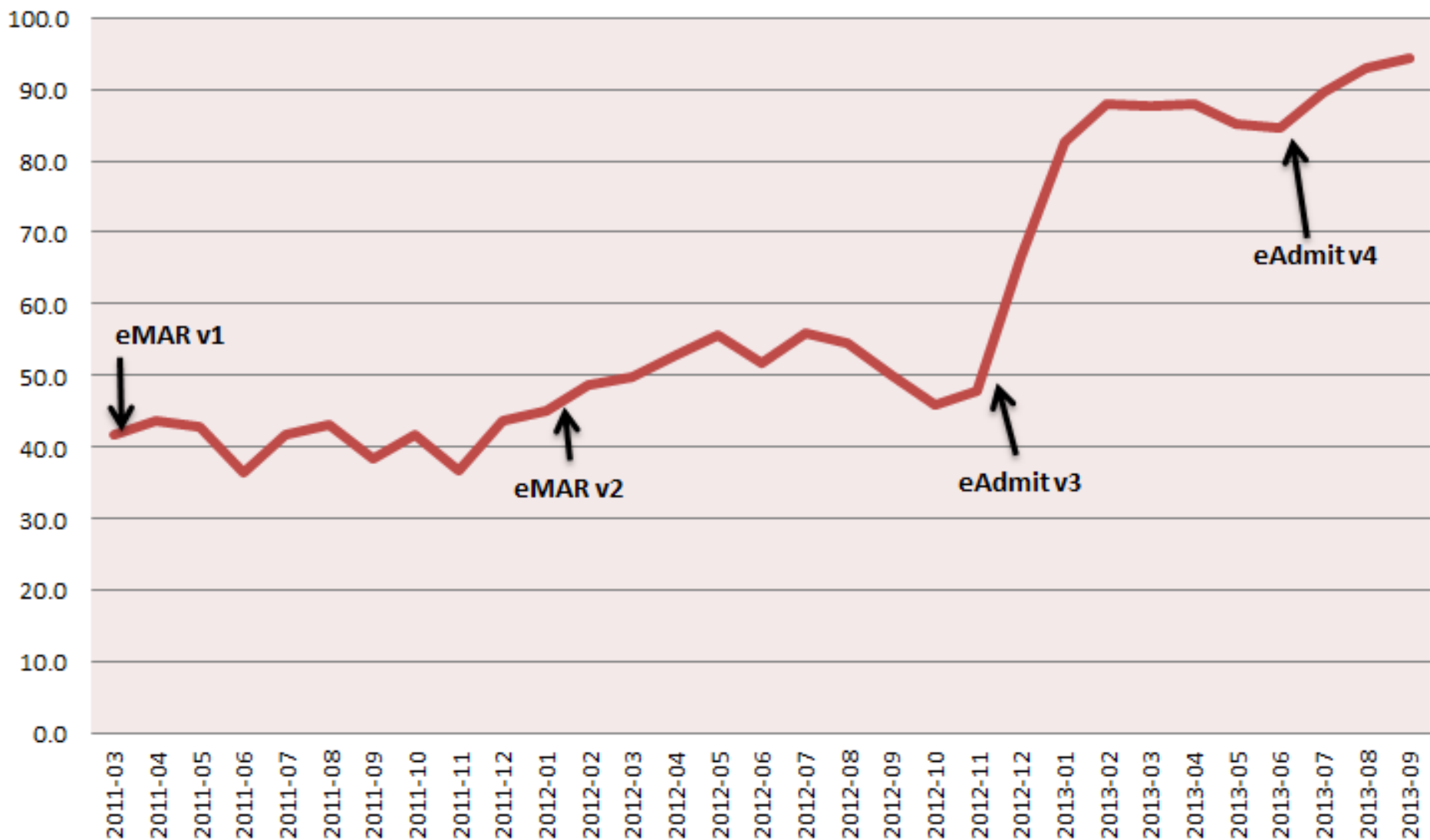


eAdmit Audit

- 4 parts
 1. Utilization/compliance audit
 2. Frontline acceptance audit
 3. Audit on document integrity
 4. Impact analysis
 - Time saving / efficiency



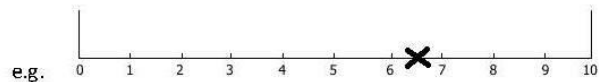
eMAR/eAdmit Utilization rate



eAdmit Audit – Questionnaire to doctors

Please kindly help to answer the following questions

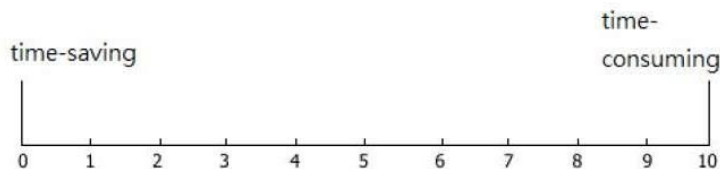
For VAS (Visual analog scale), please make a cross at the scale to indicate your choice.



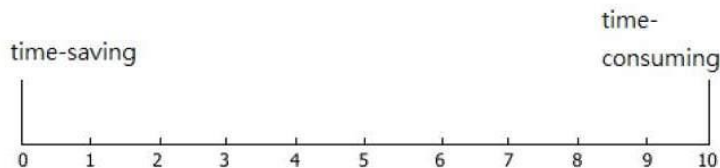
You name: _____ Doctor code: _____

1. Time spend on clerical works for EMW admission (efficiency)

(1) Conventional manually written forms (progress note, MAR, Fluid chart, Restrain form and psychiatry consultation form)

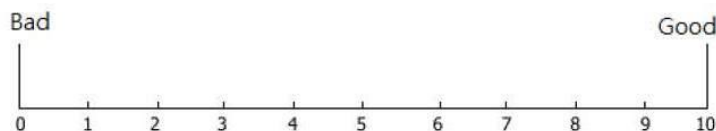


(2) eAdmit

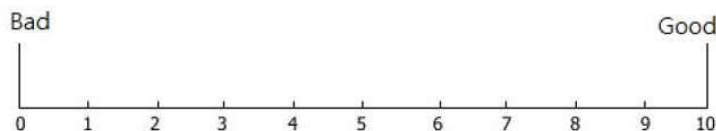


2. Preference and scoring of admission by

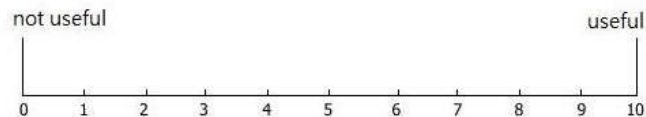
(1) Conventional manually written forms (progress note, MAR, Fluid chart, Restrain form and psychiatry consultation form)



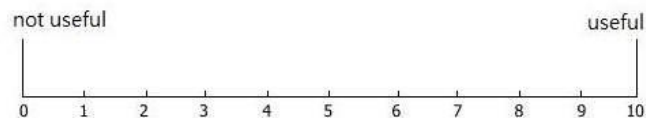
(2) eAdmit



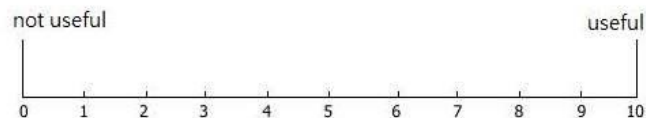
3. How useful is the eDecision function (the Artificial intelligence / clinical guidance for chest pain, based on onset time/date, ECG features and risk factors)?



4. Do you think other Artificial intelligence (AI) in clinical decision could be helpful in daily practice to you?



5. Do you think Artificial intelligence (AI) in clinical decision could be helpful in new doctors e.g. new trainees or electives?



6. Any additional suggestions / feedbacks to eAdmit f or improvement?

Thank you very much for your help in filling the questionnaire.

Jan 2012

Dr CT Lui / Dr HT Fung

Response rate

- Doctors
 - 65 questionnaires dispatched to all doctors in NTWC AED
 - 45 questionnaires received
 - Response rate = 69.2%
- Nurses
 - 37 nurses actively working in EMW (TMH 18, POH 19)
 - 31 questionnaires received
 - Response rate = 83.8%



Results - doctors

Items	Median	IQR	p value
<u>Time spent / efficiency</u>			<0.001
eAdmit	3	2.5	
conventional	7	2	
(higher score = more time consuming)			
<u>Personal preference to use</u>			<0.001
eAdmit	8	2.5	
conventional	4	4	
(higher score = like)			
eDecision useful	7	3	
(higher score = useful)			
eDecision helpful for own practice	6.5	3	
(higher score = helpful)			
eDecision helpful for new doctors	8	2	
(higher score = helpful)			

Statistics by Mann-Whitney U test

Results - nurses

Items	Median	IQR	p value
<u>Personal preference</u> eAdmit conventional (higher score = like)	7.5 5	1.5 2	0.02
Completeness of medical document eAdmit conventional (higher score = complete)	7 6	2 2.25	0.68
<u>Integrity (clear order / handwriting)</u> eAdmit conventional (higher score = good)	8 4	2 2	<0.001
Progress note / DAVIT (higher score = good) eAdmit conventional	8 5	1.5 1.25	0.01
MAR (higher score = good) eAdmit conventional	8 4	2.5 2	<0.001
Fluid chart (higher score = good) eAdmit conventional	8 5	2 2	0.01
Restrain form (higher score = good) eAdmit conventional	7 6	2.5 2	0.71
Psychiatry consultation form (higher score = good) eAdmit conventional	7.5 6	1.75 2	0.35

Part 3 – Document integrity audit

- Retrospective review of DAVIT orders in TMH EMW
 - Conventional handwritten records: 1/9/12 – 5/9/12
 - eDAVIT: 1/9/13 – 5/9/13

Results

	Conventional	eAdmit
Numbers	136	130
Missing date	21 (15.4%)	0
Missing time	56 (41.2%)	0
Missing / uninterpretable doctor code	98 (72.1%)	0
Missing / uninterpretable doctor name	105 (77.2%)	0



Part 4 Impact analysis

- eAdmit was used in 23270 cases from 3/2011 – 9/2013 (31 months)
- = 9007 cases per year
- With eAdmit we can save around 10 minute in clerical works
- Time saved per year = 9007 x 10 minutes
= 90070 minutes = 1500 hours
= 187.5 working days
(each shift of doctors' work = 8 hours)
= **3/4 doctor per year**
(each doctor had 240 working days per year)

Conclusion

	Audits	Implication
1	Utilization audit	eAdmit was very frequently used
2	Acceptance audit	eAdmit was welcomed by frontlines
3	Audit on document integrity	eAdmit improved document integrity and potentially reduce clinical risks
4	Impact analysis - Time saving / efficiency	eAdmit saved tremendous amount of time and had impact in the era of manpower shortage