Telehealth – Management of High Risk Elderly

Dr CP Wong
Chief of Integrated Medical Services
Ruttonjee & Tang Shiu Kin Hospitals;
Cluster Service Director (Community Services)
Hong Kong East Cluster, Hospital Authority

Outline

- Who are the High Risk Elderly?
- Where & How can we locate them?
- What are the Strategies to manage them in the Community with the aid of IT?
- Examples of intervention services
- Critical Success Factors

High Risk Elderly

- Risk of frequent admissions
- Risk of accidents and falls
- Risk of increased complications from their drugs and diseases
- Risk of increased morbidities
- Risk of increased mortalities

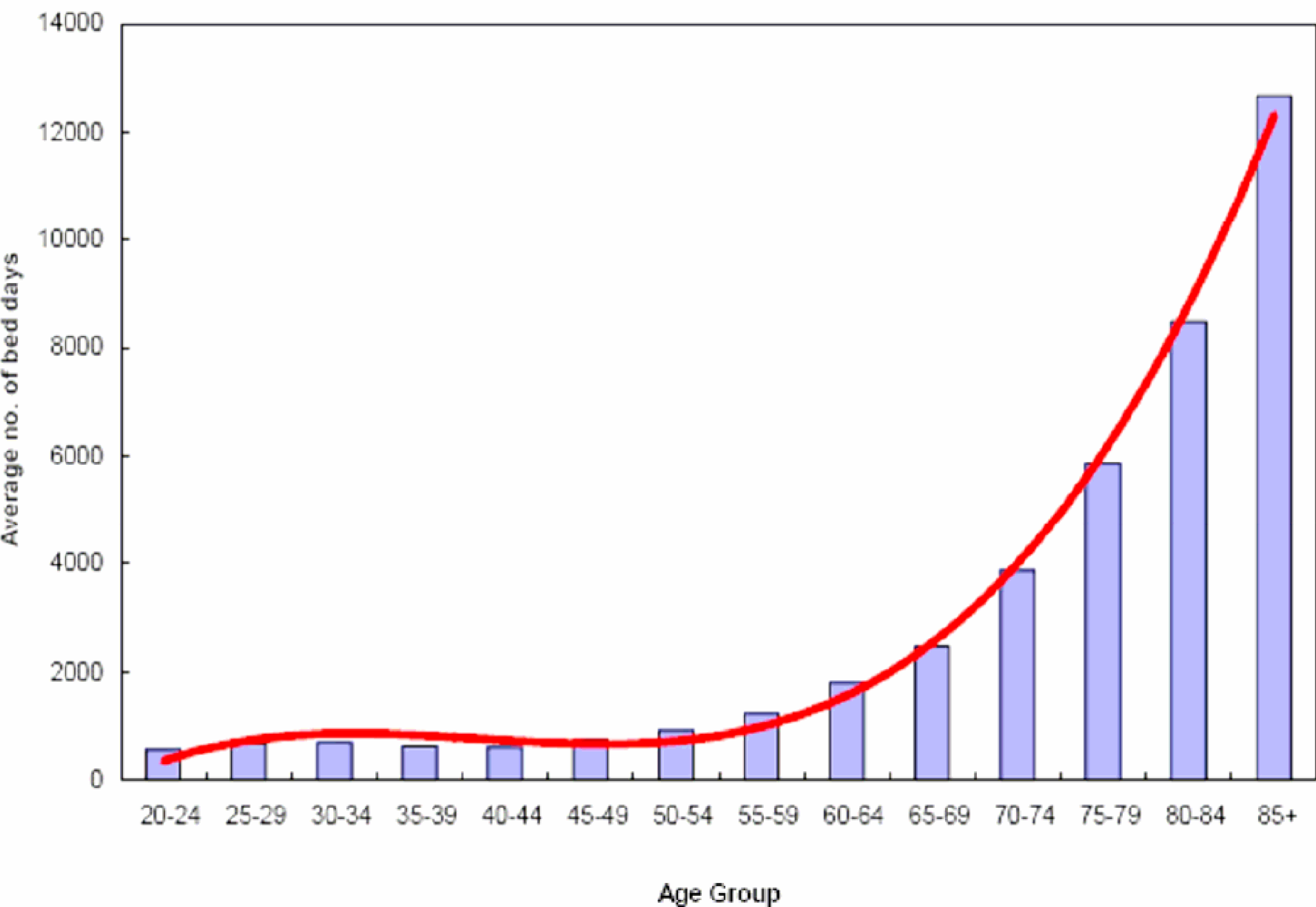
Elderly A&E admission

Year 2006	Total	Aged ≥ 65 (% of Total)
HK Resident Population[1]	6 864 346	852 796 (12.4)
A&E admission (MED)[2]		
No. of patients	166 929	107 189 (64.2)
No. of episodes	258 836	181 023 (69.9)

Elderly accounted for a disproportionate high share of medical emergency admissions of public hospitals.

Source: 1. 2006 Population By-census, Census & Statistics Department
2. Data Warehouse

Figure 2: Average No. of Bed Days for 1,000 Persons in Each Age Group (2002)



Who are the High Risk Elderly persons

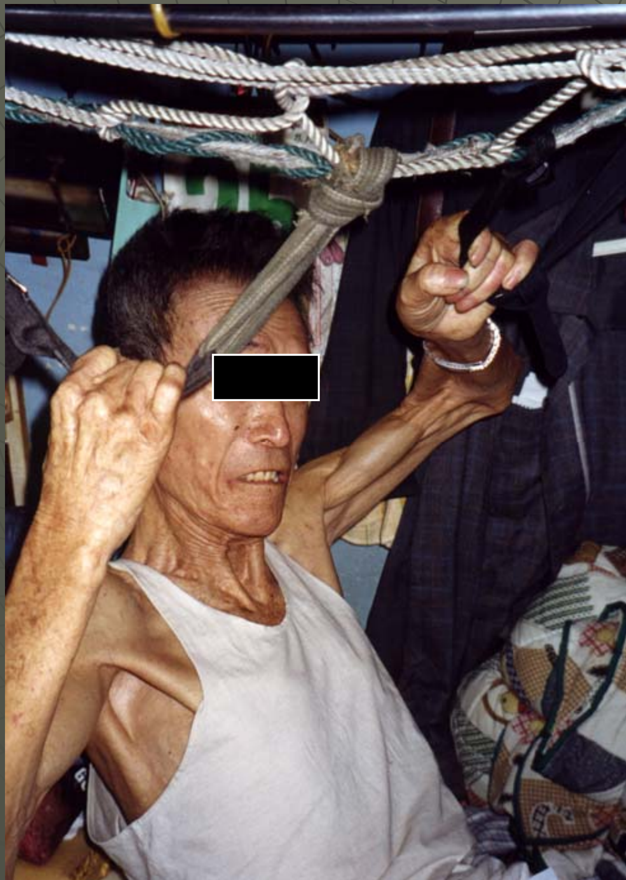
- 30,356 elderly has unplanned readmission
  - Living in RCHE (11,453)
  - Living in Community (18,903)
    - Frequent hospital admissions (≥ 3 acute admission in one year) 13,011
    - Multiple pathology (≥ 3 co-morbidity)
    - Special diagnostic group (CHF, COPD, Dementia, Malignancy)

Targets of HARRPE

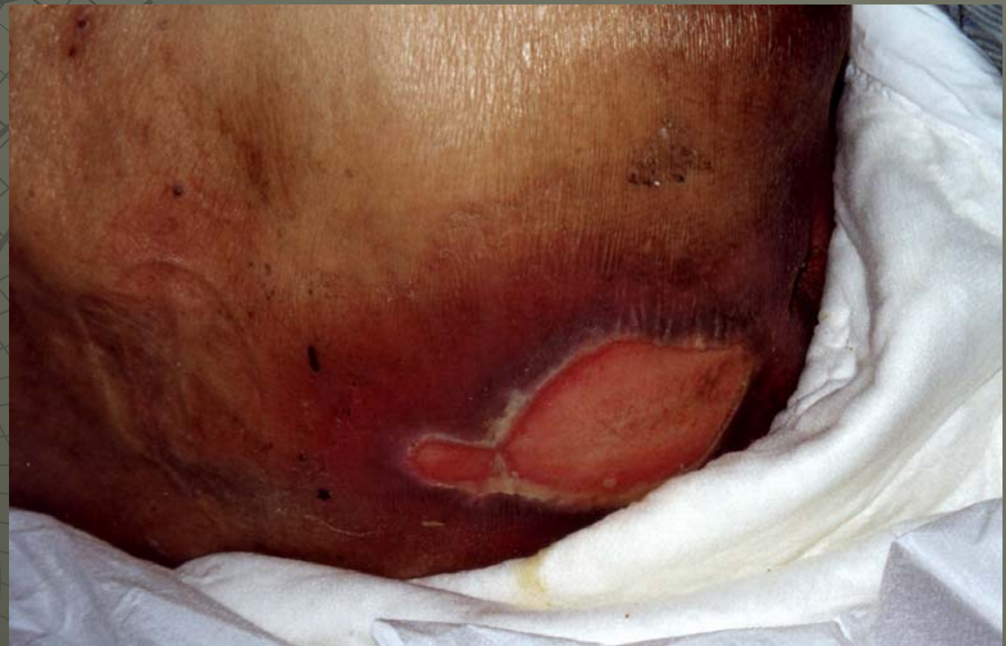
Hospital Admissions Risk Reduction Program for the Elderly

Real Life Situations

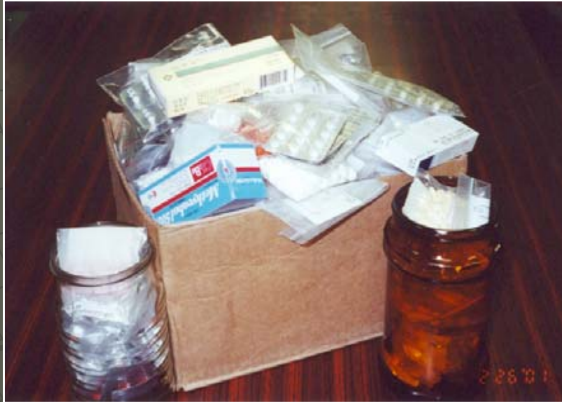
Their devices

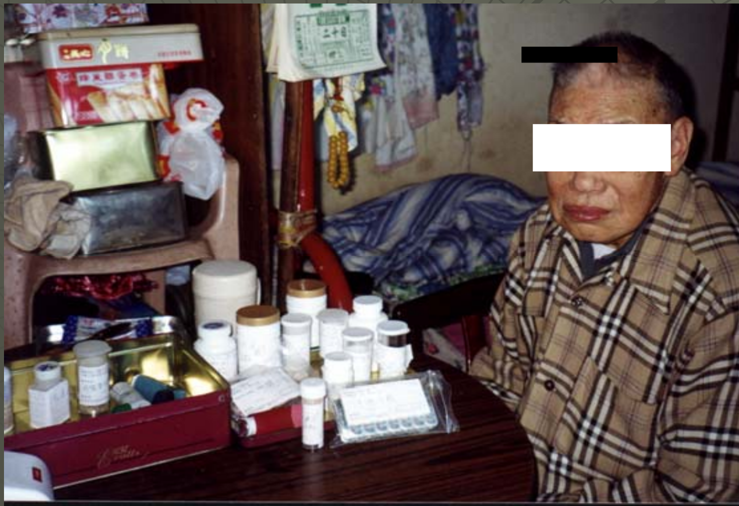


Bed Sores



Their Drugs





How can we pick them up?

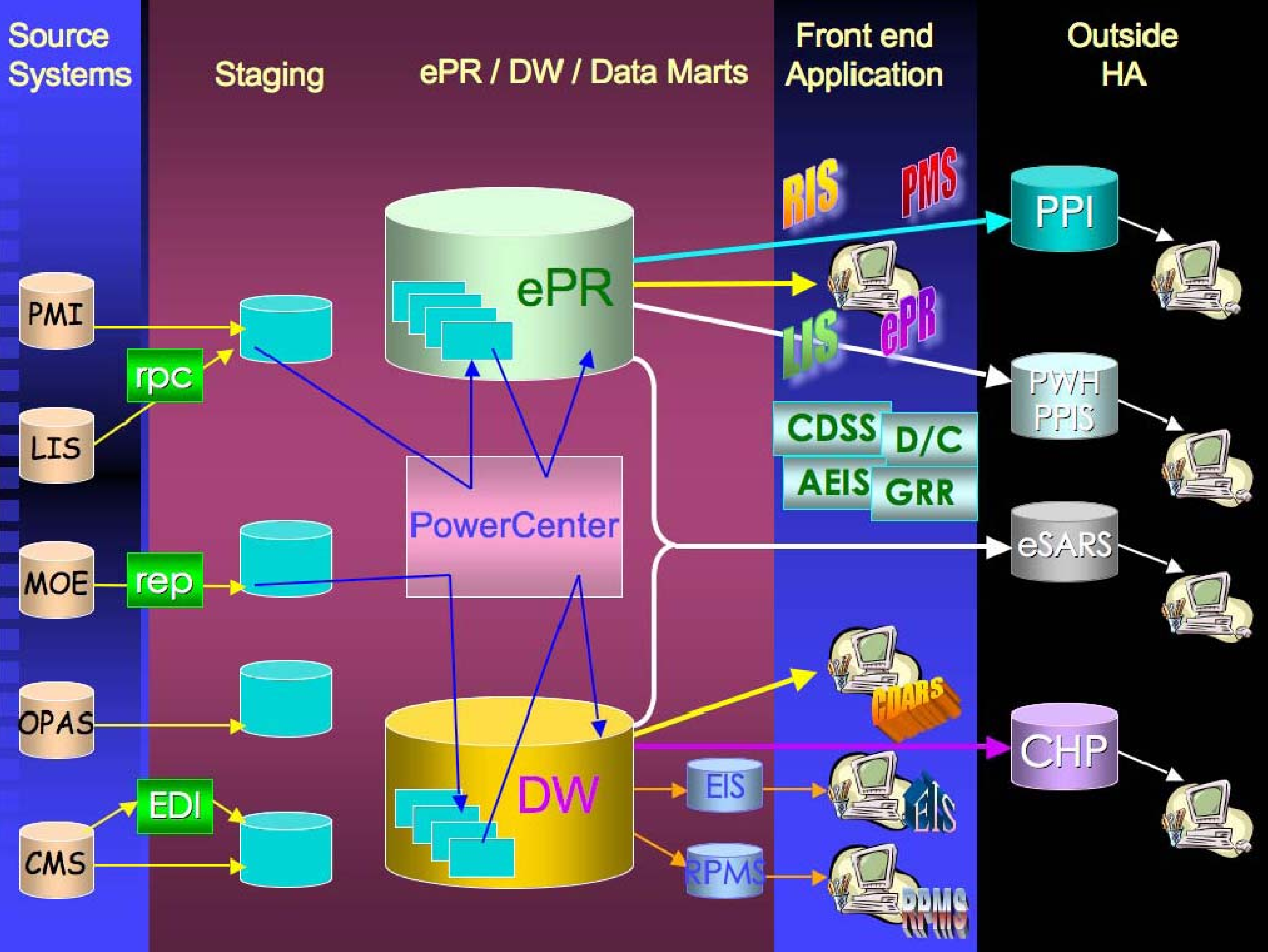
- Clinical Assessment
- High Risk Elderly Database
- HA Risk Prediction Model
- The Hidden Elderly Project

Clinical Assessment

- All patients are assessed for
  - Risk of avoidable hospitalisation
  - Service needs of the patients and care-givers
- Multi-disciplinary assessment
- Tools
  - Minimum Data Set-Home Care (MDS-HC)
  - Standardised Care Need Assessment Management (SWD)
  - High Risk Elderly System
  - Probability of Repeat Hospital Admissions Score (Pra score)
  - Frailty Index (Canadian Study of Health and Aging)

Using IT to help

- Electronic Patient Records System
- High Risk Elderly Alert System
- Hospital Admissions Risk Prediction Model
- Telephone Nursing Consultation Service
- Personal Emergency Link
- Tele-medicine Consultations


Source Systems
Staging
ePR / DW / Data Marts
Front end Application
Outside HA
PMI
rpc
LIS
MOE
rep
OPAS
EDI
CMS
ePR
PowerCenter
DW
RIS
PMS
LIS
ePR
CDSS
D/C
AEIS
GRR
CDARS
EIS
RPMS
PPI
PWH
PPIS
eSARS
CHP

ePR

HKID: 00000000 Name: PATIENT, 591068(病人) DOB: 00/00/0000 (Exact? Y) Age: 51 Sex: F Death: N

Summary | Schedule

- Patient, 590168
  - Diagnosis
  - Procedure
  - Clinical Note
    - All
    - Discharge Note
    - OP Note
    - AE Note
  - Radiology Record
    - Radiology Result
    - Radiology Appointment
  - Medication
    - Dispensed - By Episode
    - Dispensed - Summary
  - Procedure Record
    - ERS
    - OTRS
  - Laboratory Result
    - Blood Group Result
    - Cumulative Common
    - Specialty Profile
      - Medical
      - DM
      - Immunology
      - Liver
      - Renal
      - Thyroid
      - Anaesthetic
      - SARS
    - Common Profile
    - Biochemistry Result
    - Haematology Result

Diagnosis

Last Entry	Description
03/12/2004 (x14)	End Stage Renal Failure
31/12/2003 (x4)	Chronic renal failure
13/08/2003	Vomiting alone
21/07/2003	Peritonitis related to continuous ambulatory peritoneal dialysis
23/06/2003	Kidney dialysis as the cause of abnormal reaction of patient, or of later complication
14/03/2002	Hypotension
31/10/2001	Other specified surgical operations and procedures causing abnormal patient reaction, or later complication
31/10/2001	Wound bleeding, postoperative

Procedure

Last Entry	Description
03/12/2004 (x12)	Haemodialysis
16/12/2003 (x2)	Tenckhoff catheter removal
14/11/2003	Creation of arteriovenous fistula
16/09/2003 (x2)	Insertion of Tenckhoff catheter
13/07/2003	Bone marrow examination
13/07/2003	Echocardiography
13/07/2003	Ultrasonogram of abdomen
13/07/2003	Whole body scan, gallium
13/07/2003	CT abdomen with contrast
13/07/2003	Removal of haemodialysis catheter
13/07/2003	Insertion of haemodialysis catheter

Drug Allergy

Description
Nil

Current Medication

Legend

Last Dispensed	Drug name (Route)
11/10/2004	AMITRIPTYLINE HCL (Oral)
11/10/2004 (x 2)	ERYTHROPOIETIN BETA (Injection)
11/10/2004 (x 2)	SUSTANON 250 (Injection)
11/10/2004	SODIUM BICARBONATE (Oral)
11/10/2004	FAMOTIDINE (Oral)
11/10/2004	ALUMINIUM HYDROXIDE (Oral)

Recent Schedule

Legend | HKPMI View

Date		Hospital / Clinic	Service Type	Description
24/01/2005	08:45	YMT/YMTSCE	SOPD	Medicine / Ne
✓ 06/12/2004	13:30	QEH	IP	Medicine / Inte

High Risk Elderly Alert

- Computer batch job at 3am daily
- Scanning whole HA corporation for patients flagged as high risk
- For AED attendance, admissions, discharge and death
- Summary reports downloaded by community teams for immediate actions and follow up
- To date a total of 10490 active cases are marked as high risk (10% of >65 in HKEC)

Clinical Management System

File Clinical Investigation Enquiry Booking DT Report Doc./Print Other System Info. Admin.

Logoff Close PSP Dx/Px Disc Info Disc Sum Rx Modify Rx Letter/Doc RT Menu Endoscopy Intranet Next Pat

High Risk Elderly Record

Patient Information Details +Alert

Case: HN93084072(Y) HKID: C010105(0) Name: PATIENT, 80 病人 Sex: F Age: 83y

Geriatric Assessment

High Risk Patient ☑

Marked High Risk Date: 00/00/0000

Include Reason/Category: CGAT CNS EHCCS/IHCS TNCS MSW NGOs

Living Alone, Frequent Adm, Poor Support, >=2ADL, >=3 comorbidities, GDH

poor drug compliance, special diagnostic group, Others

Actively Follow-up: CGAT(Dr) CNS EHCCS/IHCS(HA) MSW NGOS

Marital Status : Single Married Widowed Widower Divorced

Family : Alone in HK, Live with Family, With Maid, Aged Home, Family in HK, Guardianship, Others

Next of Kin : Name : Tel :

Financial Asst : CSSA OAA Diet Suppl NDA Diaper Suppl HDA

Conscious Level : Alert Apathetic Confused Stuporous

Mood : Normal Depressed Anxious Irritable Mute

Communication barrier : Dialect :

Speech : Clear Unclear Speech No Speech

Vision : Normal Poor Blind Glasses

Hearing : Normal Poor Deaf Hearing Aid

ADL :	*Feeding*	*Dressing*	*Toileting*	*Bathing*	*Transfer*	*Ambulating*
Self						
Asst						
Depend						

Ambulation : Independent, Frame Walker, Domestic Walker, Chairbound, Assisted with Stick/Quad, Bedbound

IADL : Laundry Housekeeping Shopping Meal Preparation

Diet : Normal NG Tube PEG Special Diet Others

Pressure Sore : None Sites

Continence : None Occasional Urinary Double On Napkin

History of Fall (recent 6 months) : Yes No

Score : MMSE : (0 - 30) AMT : (0 - 10) BI : (0 - 20) or (0 - 100)

Norton : (5 - 20) EMS : (0 - 20)

Drug Compliance : Good Fair Poor

Last update date: 18/05/2005 16:28

Delete Save Undo Print Close

Ready QMH MED SUPER USER 12345678901234567890

MRO retrieved High-risk Cases

- With the aid of CDARS (Clinical Data Analysis and Reporting System)
- Elderly patients discharged from Department of Medicine & Geriatrics in HKEC hospitals and fit 2 out of 3 of the following criteria:
  - Frequent hospital admissions

    >= 3 acute medical admissions in one year
  - Multiple pathology

    >=3 co-morbidities
  - Special diagnostic groups

    Congestive Heart Failure, Chronic Obstructive Airway Disease, Chronic Renal Failure, Malignancy

Clinical Management System

File Clinical Investigation Enquiry Booking DT Report Doc./Print Other System Info. Admin.

Logoff Close PSP Dx/Px Disc Info Disc Sum Rx Modify Rx Letter/Doc Ix Request OP Book Bed Assign Transfer Discharge Rx Enq R-Trial Disc HKPMI Next Pat

High Risk Elderly Report

PAMELA YOUDE NETHERSOLE EASTERN HOSPITAL
CLINICAL MANAGEMENT SYSTEM

Report on High Risk Elderly Admission/Discharge during 17/05/2005 to 18/05/2005

Report Time : 18/05/2005 08:09

High Risk Category: CGAT

HKID	Patient name	Sex	Age	Death date	Case no	Adm hosp	Adm Source	Adm dtm	Dis. dtm	Dest.	Last spec	Last ward	Bed no	home
Follow-up team : CG6														
B0333765	KOK, KWEI	M	83		HN05009223V	RH	4	17/05/2005			GERA	A4	28	SHUN FUK HOME FOR AGED (CHAI WAN BRANCH) : CW - CHAI WAN ROAD 220, SHOP G ON G/F, 1/F 7 SHOP G ON 2/F, WAH TAI MANSION
A4072475	CHEUNG, YUEN YU	F	88		HN05009216S	RH	4	17/05/2005			GERA	B4	23	SUN LIGHT GEROCOMY CENTRE (C.W.) : CW - CHAI WAN ROAD 111, 2/F., Rm.B
A7644615	AU, KWOK	M	73		HN05009232U	RH	3	17/05/2005			AINM	A7	33	SUN LIGHT GEROCOMY CENTRE (C.W.) : CW - CHAI WAN ROAD 111, 2/F., Rm.B
B9039185	TSE, SAU CHUN	F	92		HN05009222X	RH	3	17/05/2005			AING	B4	37	T.W.G.HS. YU CHUN KEUNG MEMORIAL CARE AND ATTENTION HOME : WCH - WONG CHUK HANG PATH 2, PORTION OF LOWER G/F & G/F, EAST & WEST WING OF 1/F & 2/F
A1060697	CHAN, SO	F	79		HN05009205X	RH	4	17/05/2005			GERA	B4	09	T.W.G.HS. YU CHUN KEUNG MEMORIAL

High Risk Category: ALL

- ALL
- CGAT
- CNS
- EHCCS/IHCS

Start Date: (Admission/Discharge) 17/12/2003

End Date: (Admission/Discharge) 22/12/2003

Retrieve | Page Up | Page Down | Close

Ready | QMH | MED | Train

The Risk Prediction Model

Index episode

An encounter with elderly (aged 65+) during:

- ~~Attendance at A&ED for medical conditions~~
- Emergency admission to acute medical ward
- ~~Elective admission to acute medical ward~~
- ~~Attendance at medicine specialist outpatient clinic~~

HARRPE focus on A&E admission (MED) in view of cost-effectiveness

Discharge Alive

Look back period ← Day 0 → **Look forward period** Day 28

14 Predictors :

- **Socio-demographics:** Sex, Age and On social security allowance (CSSA) or not
- **Prior utilization in past 1 year:** No. of A&E attendances (MED), No. of unplanned readmissions (MED), No. of A&E admissions (MED) [excluding unplanned readmissions], No. of acute and non-acute patient days (MED)
- **Co-morbidity:** COAD, Congestive heart failure, Cancer, Whether treated with renal dialysis in past 1 year and No. of distinct diagnosis groups
- **Index episode:** Which type

Risk Prediction Model

To predict the probability of A&E admission (MED) in 28 days ahead

Risk stratification

Data Elements for the Computation of Risk of A&E Admission (Medical Specialty)

1. Type of admission (current episode)
2. Male Sex
3. Age
4. CSSA recipient
5. No of A&E 1st attendances
6. No of unplanned readmissions (MED)
7. No of A&E admissions (MED)
8. No of acute patient days (MED)
9. No of non-acute patient days (MED)
10. Chronic obstructive airway disease (COAD)
11. Heart Failure
12. Cancer
13. Ever treated with Haemodialysis or Peritoneal Dialysis (for Renal patient) in the past 1 year

Data Elements for the Computation of Risk of A&E Admission (Medicine Specialty)

14. No of distinct diagnosis groups ever coded in CMS
    1. Nutritional deficiencies
    2. Malignant neoplasms
    3. Diabetes mellitus
    4. Epilepsy
    5. Dementia, other degenerative & hereditary CNS disorders
    6. Parkinson disease
    7. Ischaemic heart disease
    8. Heart failure
    9. Cerebrovascular disease
    10. Chronic obstructive pulmonary disease
    11. Bronchiectasis
    12. Cirrhosis of liver
    13. GI haemorrhage
    14. Chronic renal failure
    15. Chronic ulcer of skin

Development vs Validation of Risk Prediction Model

Development dataset

2005

No. of episode: 1,167,521
No. of headcount: 304,900

Validation dataset

1Q 2006

No. of episode: 294,749
No. of headcount: 195,448

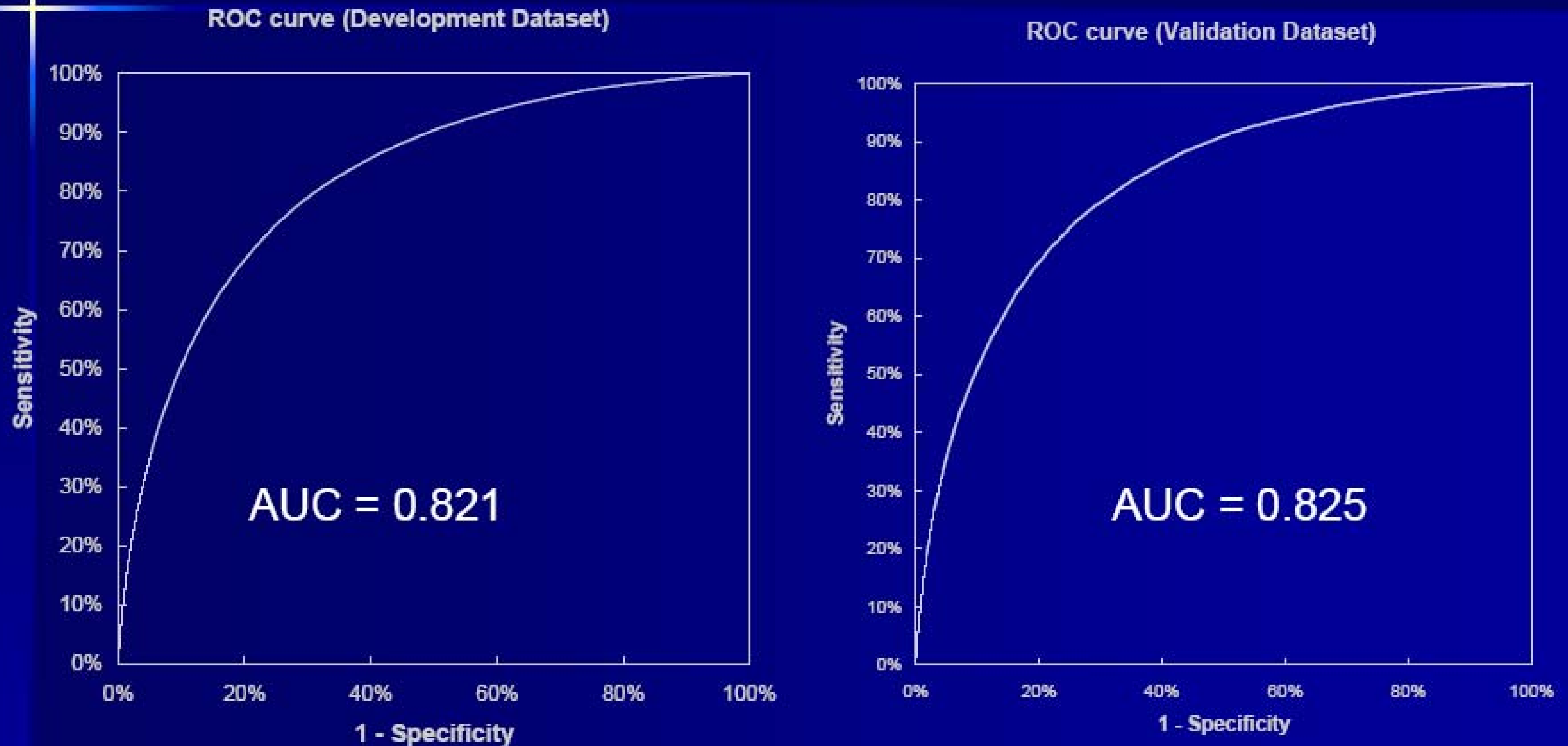
Model building

Model

Model validation

Model Discrimination Performance by Area Under ROC Curve

"Receiver Operating Characteristics"



Model Predictive Performance: Good discrimination power (Area under ROC curve = 0.82 for both development & validation dataset)

TNCS

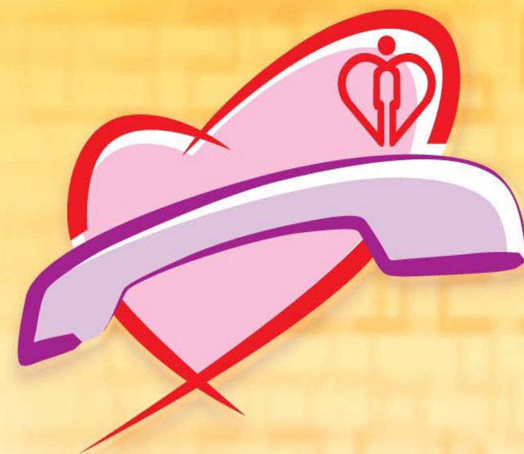
- Telephone Nursing Consultation Service
- Started Jan 2003, full function Jun 2004
- Supporting an active pool of 4558 high risk elderly in the community setting (excluding those in residential care homes)
- Becoming the HARRPE in 2007

護訊鈴

電話諮詢及支援服務

早晨，「護訊鈴」，
我喺陳姑娘，請問
有咩可以幫到你？

我食咗D血壓藥
後就覺得好頭暈，
姑娘，點算呀？



2572 6896

港島東聯網醫院

護訊鈴

電話諮詢及支援服務

簡單方便
只須一個電話
便有專業護士為你
提供一站式的
醫護服務及社區支援

宗旨

- 透過電話聯絡，為居住於社區內的體弱高危人士提供延續性之醫護及社區支援。

服務內容

護士透過電話的聯絡，按個別需要提供以下服務：

- 即時評估
- 護理指導
- 藥物指導
- 營養指導
- 健康教育
- 諮詢醫生及各專職醫療的專業意見
- 轉介往物理治療、職業治療、社康護士等
- 介紹及轉介社區資源，如長者地區中心、家居照顧服務等
- 安排提早覆診
- 安排入院檢查及治療

為確保服務質素，電話對話可能會被錄音

對象

- 經「護訊鈴」審核及評定之體弱高危人士。

如何使用「護訊鈴」?
只需致電 **2572 6896**
便有註冊護士解答
你的查詢

服務時間

- 星期一至五
  - 上午八時至下午八時
- 星期六、日及公眾假期
  - 上午八時至下午四時

28 Telephone Triage Protocols Developed

- Abdominal Pain
- Appetite Loss
- Back Pain
- Black / Bloody stool
- Chest Pain
- Confusion
- Constipation
- Cough
- DM
- Diarrhoea
- Dizziness
- Falls
- Fatigue
- Fever
- Headache
- Hemorrhoids
- Hypertension
- Hypotension
- Insomnia
- Itching
- Joint Pain/ Swelling
- Leg Pain / Swelling
- Numbness and tingling
- Rash
- SOB
- Skin Lesions
- Swallowing Difficulty
- Weakness

Develop 50 more clinical protocols

Abrasions	Depression	Hearing Loss	Muscle Cramps	Suicide Attempt, Threat
Allergic Reaction	Domestic Abuse	Heartbeat, Rapid	Nausea/Vomiting, Adult	Swelling
Altered Level of Consciousness	Eye Injury	Heartbeat, Slow	Neck Pain	Tongue Problems
Ankle Problems	Eye Problems	Heartburn	Nosebleed	Toothache
Anxiety	Facial Pain	Hoarseness	Overdose	Urination, Difficulty
Arm or Hand Problems	Fainting	Hypothermia	Scabies	Urination, Painful
Asthma	Finger and Toe Problems	Jaundice	Seizure	Urine, Abnormal Color
Bone, Joint and tissue Injury	Foot Problems	Jaw pain	Shoulder Pain	Vision Problems
Bruising	Gas/Flatulence	Knee Pain/Swelling	Sore Throat	Wheezing
Dehydration	Head Injury	Mouth Problems	Stools, Abnormal	Wound Healing and Infection

ABDOMINAL PAIN

Key Questions: Name, Age, Onset ,Recent surgery, Injury

Question	Recommendation
A. Are any of the following present? -Severe pallor -Loss of consciousness -Signs of shock -Severe persistent pain -Fainting/lightheadedness -Vomiting blood or dark coffee– grounds-like emesis -Rapidly worsening of symptoms	**YES** Seek Emergency Care **NO** Go To B
B Are any of the following present? - History of recent abdominal surgery -RLQ pain with poor appetite, nausea and/or vomiting, or fever -Bloody or black stools -Ingestion of new medication -Severe nausea and vomiting -Temperature > 101°F (38.3°C)	**YES** Medical care within 2-4 hrs **NO** Go TO C
C. Are any of the following present? -History of hepatitis or exposure -Unexplained progressive abdominal swelling -Painful or difficult urination -Blood in urine -Pain interferes with activity	**YES** Medical care with 24 hrs **NO** Go To D

D. Are any of the following present?

- Vaginal or urethral discharge
- Nausea, vomiting, diarrhea for more than 24 hours
- History of abdominal pain and usual treatment is ineffective
- Constipation
- History of irritable bowel
- Significant increase in stress level
- Intermittent mild pain associated with an empty stomach, eating certain foods, or use of antibiotic, or anti-inflammatory medications
- Mild infrequent diarrhea
- Other family members are ill

YES Consult GP/GOPC
NO Follow Home Care Instruction

Home Care Instructions: Abdominal Pain,

- Clear liquids or bland for 12 to 24 hours.
- Take medications as directed by your doctor
- Apply heat (moist hot towel or heating pad) to the abdomen for cramping.

Additional Instructions:

Report the Following Problems to Your TNCS/GP/GOPC

- Severe pain > 2 hours and relieve by general measure
- Fever
- Bloody or black stools or emesis
- Pain worsens with heat or activity

Seek Emergency Care Immediately If Any of the Following Occur

- Unusually firm or hard abdomen
- Persistent vomiting
- Severe persistent pain
- Fainting/lightheadedness

Clinical Management System

File Clinical Investigation Enquiry Booking Report Doc./Print Other System Info. Admin.

Close/Logoff | Dx/Px | Disc Info | Con Sum | OP Book | Rx | Modify Rx | Ix Request | Letter/Doc | Lab Result | Rad Result | PMI | Lab/Rd Rpt | Next Pat

Telephone Nursing Consultation Service

Patient Information — MKC | Details | Alert

Case:

General Info. | Assessment | Intervention 1 | Intervention 2 | F.U. Call | Return Call

Referral Date 00-00-0000

Initial Call

Date & Time 00-00-0000 00:00 Called by Relationship with patient

Finished at 00-00-0000 00:00 Name of Caller Tel. No.

Membership Status

- Under the care of Post Discharge Follow-up Programme ○ RHTSK ○ TWEH ○ PYNEH ○ N.A.
- Under the care of Home Help Service
- High risk elderly data base project

Other Relevant Information

Regular F. U. in G.P. ● No ○ Yes

Name of G.P. (1) (2)

Regular F. U. in other Clinics ● No ○ Yes

Name of Clinic (1) (6)

(2) (7)

(3) (8)

(4) (9)

(5) (10)

Current Community Support ☐ Home Help ... ☐ CNS ...

☐ AHCP ... ☐ Others ...

Created by on Updated by on >

New | Go to | Copy | Print | Save | Close

Ready PYN SUR LIU, CHEUNG YAT JEFF 11-08-2005

Clinical Management System

File Clinical Investigation Enquiry Booking Report Doc./Print Other System Info. Admin.

Close/Logoff Dx/Px Disc Info Con Sum OP Book Rx Modify Rx Ix Request Letter/Doc Lab Result Rad Result PMI Lab/Rd Rpt Next Pat

Telephone Nursing Consultation Service

Patient Information

MKC | Details | Alert

Case:

General Info. | **Assessment** | Intervention 1 | Intervention 2 | F.U. Call | Return Call

Chief Complaints

Complete description (location, quality, quantity, radiation?)

Onset

Gradual or sudden, since when?

Associated Symptoms

What other symptoms accompany this problem?

History of Complaint

Same previous hx, dx, acute/chronic problem, new/old problem?

Aggravating & Relieving Factors

What makes it worse or better?

Others

< Created by on Updated by on >

New | Go to | Copy | Print | Save | Close

Ready PYN SUR LIU, CHEUNG YAT JEFF 11-08-2005

Clinical Management System

File Clinical Investigation Enquiry Booking Report Doc./Print Other System Info. Admin.

Close/Logoff Dx/Px Disc Info Con Sum OP Book Rx Modify Rx Ix Request Letter/Doc Lab Result Rad Result PMI Lab/Rd Rpt Next Pat

Telephone Nursing Consultation Service

Patient Information — MKC | Details | Alert

Case:

General Info. | Assessment | Intervention 1 | Intervention 2 | F.U. Call | Return Call

Protocol Used ( ) Yes ( ) No — Reason

(1)

(2)

(3) — Others

Triage Categories

( ) Emergency ( ) Urgent ( ) Non-urgent

Specialist Consultation

(•) No ( ) Yes (1) Name — Rank — Date/Time 00-00-0000 00:00

(2) Name — Rank — Date/Time 00-00-0000 00:00

Remarks

< Created by — on — Updated by — on >

New | Go to | Copy | Print | Save | Close

Ready | PYN | SUR | LIU, CHEUNG YAT JEFF 11-08-2005

Clinical Management System

File Clinical Investigation Enquiry Booking Report Doc./Print Other System Info. Admin.

Close/Logoff Dx/Px Disc Info Con Sum OP Book Rx Modify Rx Ix Request Letter/Doc Lab Result Rad Result PMI Lab/Rd Rpt Next Pat

Telephone Nursing Consultation Service

Patient Information

MKC | Details | Alert

Case:

General Info. | Assessment | Intervention 1 | Intervention 2 | F.U. Call | Return Call

Advice Given

- ☐ Go to A&E Department
- ☐ See G.P. within 24-48 hours
- ☐ See GOPD within 24-48 hours
- ☐ Book early F.U. appointment
- ☐ Arrange Ad hoc doctor's clinic
- ☐ Arrange direct admission to hospital
- ☐ Refer to CNS/CGAC/GDH
- ☐ Refer to Allied Health
- ☐ Refer to volunteer service
- ☐ Refer to DECC/IFSC
- ☐ Health Education
- ☐ Drug Management
- ☐ Environmental advice
- ☐ Information on community resources
- ☐ Others

Does the caller agree with the advice given? ○ Yes ○ No Reason

Remark: Ask caller to call back if problem worsened.

< Created by on Updated by on >

New | Go to | Copy | Print | Save | Close

Ready | PYN | SUR | LIU, CHEUNG YAT JEFF 11-08-2005

Daily operations of TNCS

- Service Hours
  - Mon - Fri: 8am – 8pm
  - Sat, Sun & Holidays: 8am – 4pm
- Manpower
  - 4 Full Time Equivalent Registered Nurses
  - 1 Clerk
  - 1 Advanced Practice Nurse

Workload of TNCS in Mar 08

	Mar 08
No of patients registered	5998
No of active cases	4558
No of calls made/month	2313
Average duration/call (min)	11.5
No of calls initiated by nurses	1809 (78.2%)
No of calls initiated by patients / care-givers	504 (21.8%)

Triage

Advice given (multiple choices)	Jan	Feb	Mar
Go to A&E Department	16	26	21
See G.P. within 24-48 hours	8	4	5
See GOPD within 24-48 hours/ (no. of cases referred by TNCS nurses)	33(1)	38(6)	33(5)
Book early F.U. appointment	2	2	2
Arrange Ad hoc doctor's clinic	3	3	2
Arrange direct admission to hospital (PYNEH/RHTSK/WCHH)	8	2/3/0	3/0/0

Triage & Advices

Advice given (multiple choices)	Jan	Feb	Mar
Refer to CNS/CGAC/GDH	44/0/0	35/0/0	33/0/0
Refer to Allied Health	5	10	6
Health Education	1461	1458	1423
Drug Management	1453	1409	1378
Environmental advice	1055	953	781
Information on community resources	1657	1594	1562
Refer to volunteer service	3	0	1
Refer to DECC/IFSC	6/5	12/2	13/2
Others	1323	1213	1251

HARRPE Program

- Invite patient to be member of TNCS
- Active phone follow-up:
  - Upon discharge from ward/AED
  - 3 days after the initial call + as necessary
- Phone consultation from patient/care giver
- CNS home follow-up (score $\geq$0.3 + unplanned readmission)
- Community Support from NGOs
- Case conference
- HARRPE clinic

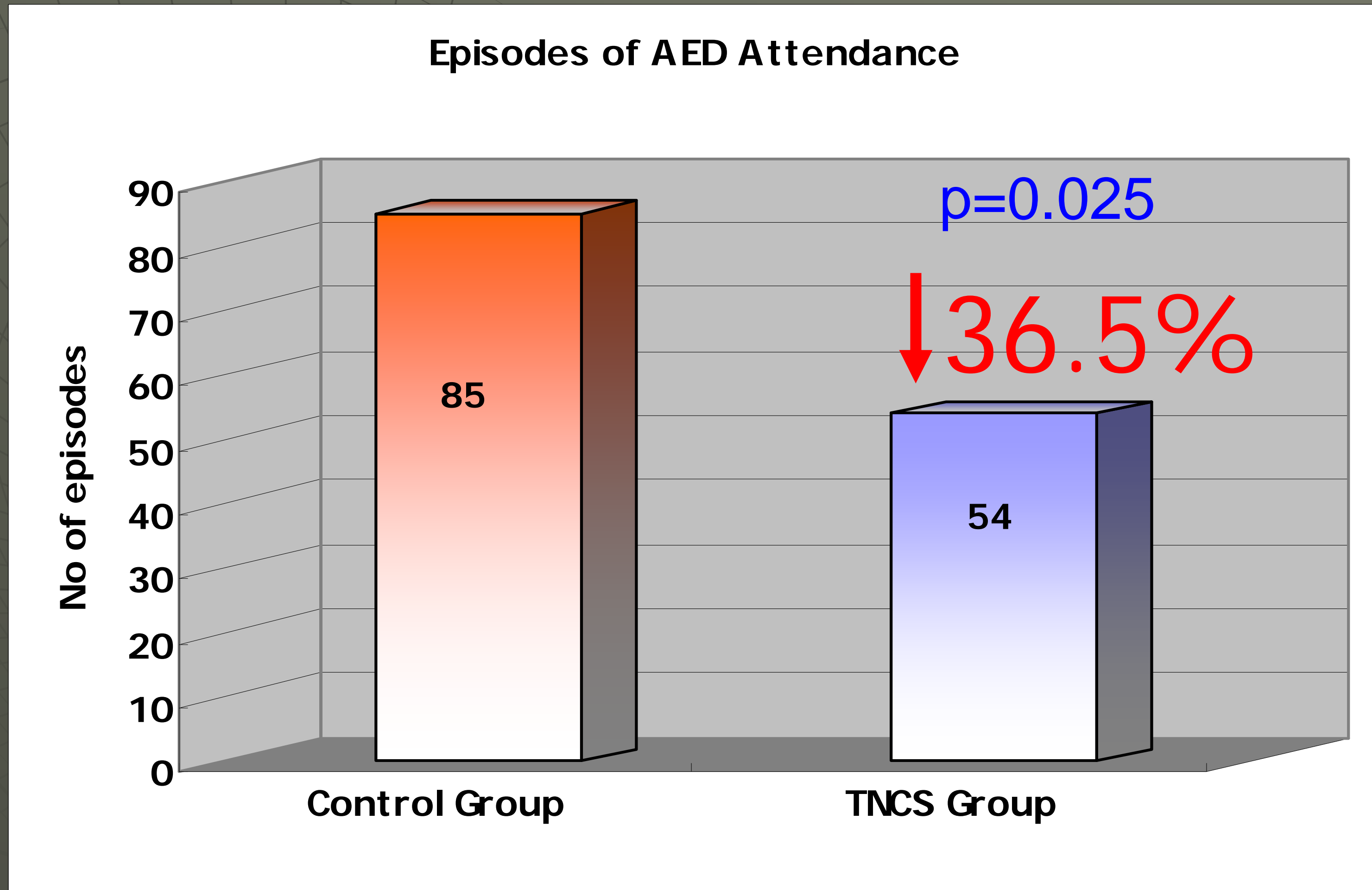
Strong Backup System

- Direct clinical admissions
- Early follow-up appointments in SOPD
- Ad hoc doctor's clinics
- Advice from experts – Medical/NS/Allied Health
- Refer to CNS/Community allied health
- Support from Patient Resource Center
- Medical support after normal service hour from Department of Medicine, RHTSK and $\pm$ PYNEH

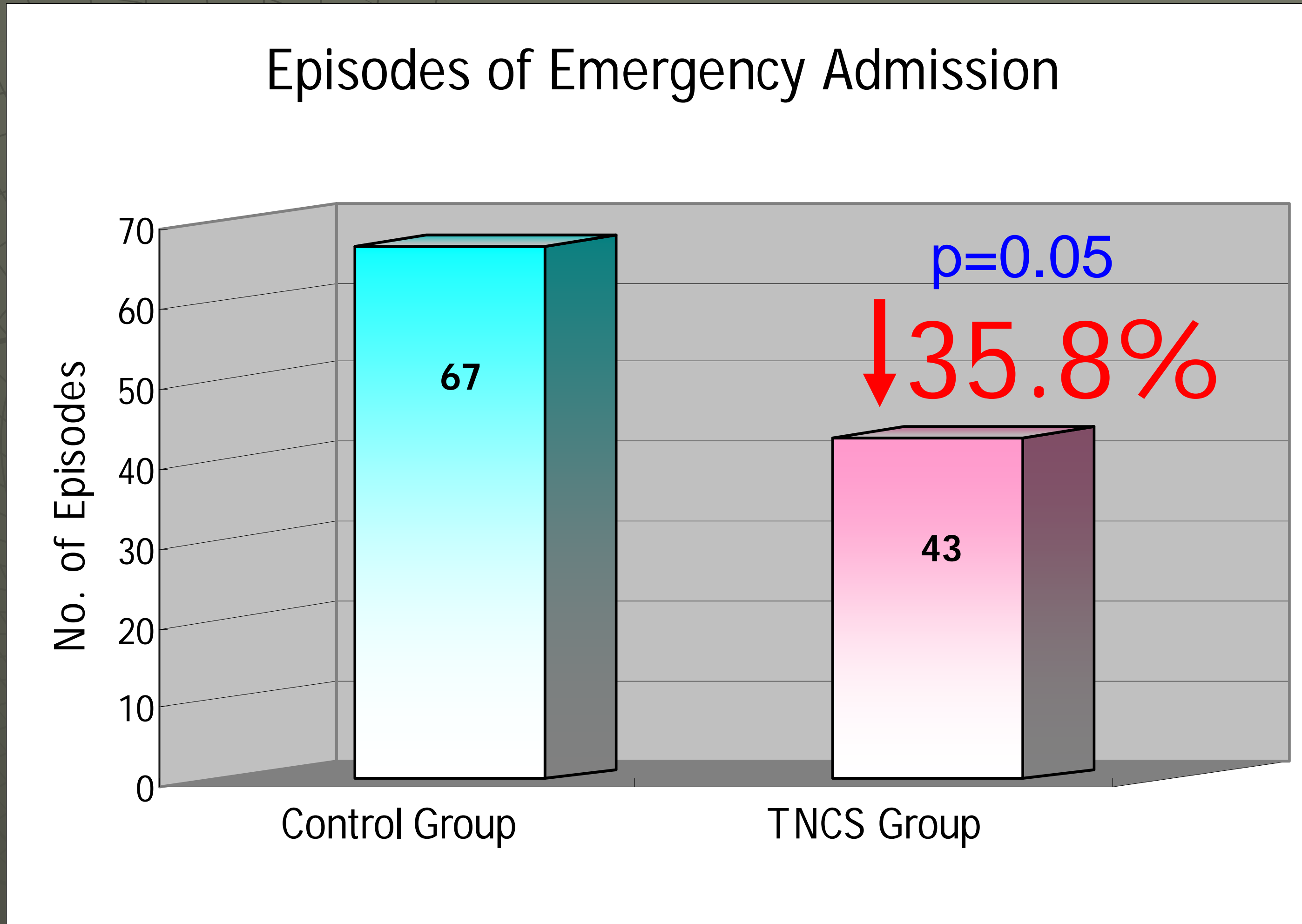
Results

- Outcomes evaluated in terms of hospital utilization statistics, and 90 days mortality rates
- Patient and care-givers satisfaction
- Significant reduction of hospital resources utilization
- Good cost benefit ratios

Outcomes
Decreased Total AED Attendance



Outcomes
Decreased Total Emergency Admissions



Study Methodology

- 476 patients recruited 26/07 – 14/09/2007
  - Treatment group: 249
  - Control group : 227
- Randomly assigned to
  - Treatment group
  - Control group (conventional, no TNCS)
- Demographic Data compared
- Evaluates the outcomes after 28 & 90 days
  - A&ED attendance
  - Number of admissions
  - Length of Stay

Results - Demographics

	Control Group (n = 227)	HARRPE Group (n = 249)	P value
Age	80.76	79.76	0.244
Sex M:F	121 : 106	131 : 118	0.960
No. of regular medications	6.46	6.93	0.776
HARRPE score	0.26647	0.25187	0.054

All Comparable ($p>0.05$)

Post 28 days' data

No. of Episodes	Control N=227	Treatment N=249	Relative Reduction %
Unplanned readmissions	61	52	↓ 22.3%
A&ED Attendances	82	67	↓ 5.5%
Clinical admissions	46	32	↓ 36.6%
Total Bed Days (unplanned adm)	426	329	↓ 29.6%
Total Bed Days (planned adm)	178	132	↓ 32.4%

Post 28 days' data – Multiple Utilization of Hospital Service

	1st utilization		2nd utilization		>2 utilizations	
No. of Patients	Control	Treatment	Control	Treatment	Control	Treatment
Unplanned	55	44	6	8	0	0
AED	69*	54*	9	11	2	1
Planned	30	28	3	2	4	1

Remarks: * p value = 0.036

Post 90 days' data

No. of Episodes	Control **N=131**	Treatment **N=134**	Relative Reduction %
Unplanned readmissions	110	79	↓ 29.8%
AED Attendances	148	99	↓ 34.6%
Clinical admissions	94	37	↓ 61.5%
Total Bed Days (unplanned adm)	986	715	↓ 29.1%
Total Bed Days (planned adm)	229	128	↓ 45.8%

28-day A&E admission & 90-day mortality for HKEC Study Cohort vs HKEC Control Cohort

	HKEC Study Cohort	HKEC Control Cohort	Change in Absolute Risk	Change in Relative Risk	p-value
28-day A&E admission (MED)* rate %	15.66	22.12	- 6.46	- 29.2%	0.0715
90-day mortality rate %	6.02	11.95	- 5.92	- 49.6%	0.0232

* Note: A&E admissions (MED) also include EMW admissions with subsequent transfer to MED

Personal Emergency Response System PE Link Service

- Elderly Alarm Pendants
- Senior Citizens Home Safety Association

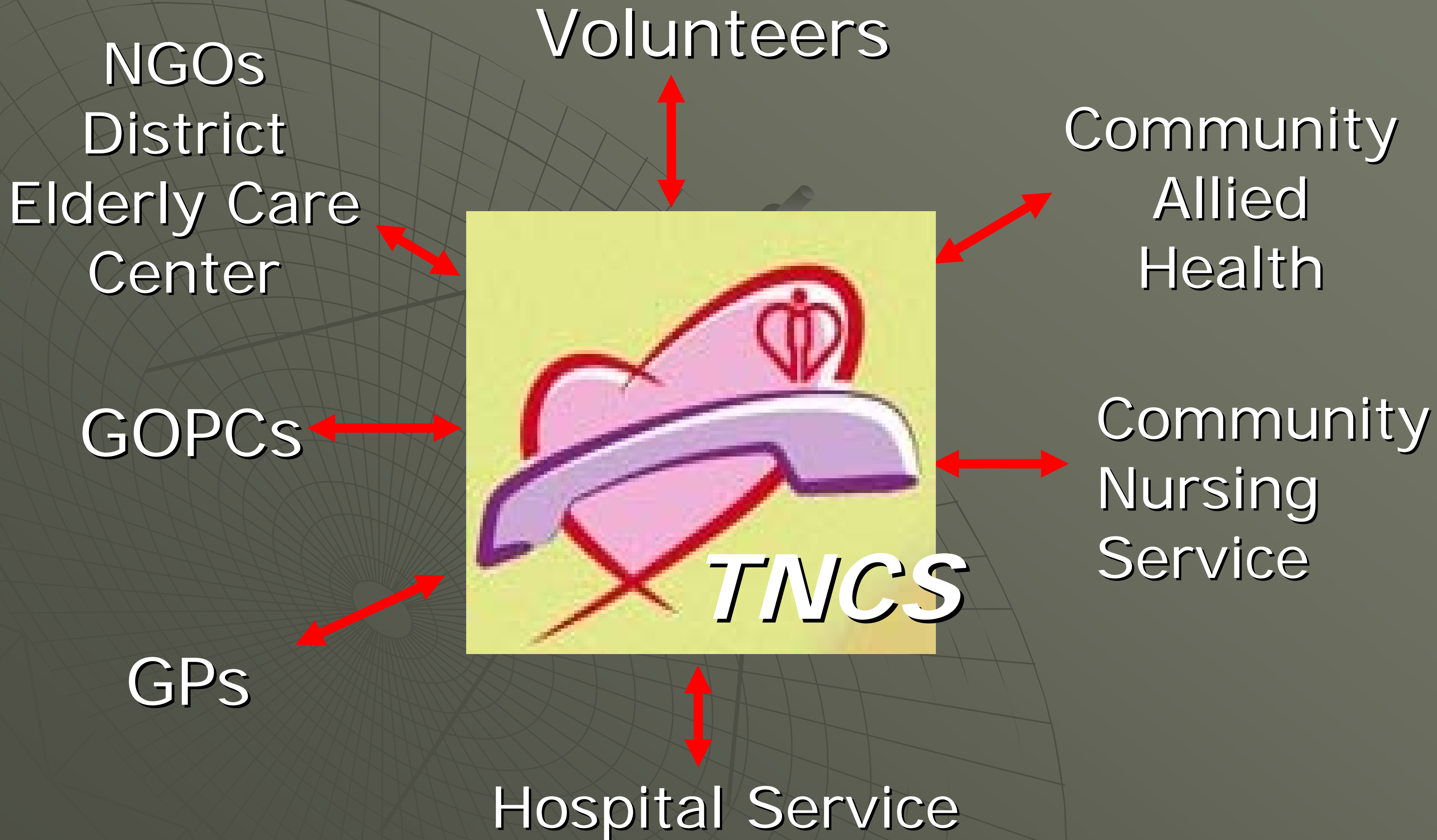
Telegeriatrics

- Ruttonjee Hospital
- Shatin Hospital
- Caritas Medical Centre
- …

Key to Success

- One on One
- Pro-active
- Your NGO partners and other stakeholders are extremely important

Co-ordinate with relevant healthcare stakeholders



The Bottom Line

- The revolving door phenomenon should no longer exist !
- Targeted one-on-one surveillance
- Proactive approach
- Liaise with your community partners
- Using Information Technology to help
- Ultimate benefits are to the elderly

Thank You