CHEMOTHERAPY TREATMENT **APPOINTMENT SCHEDULING SYSTEM (CTS)**

A Breakthrough in HealthCare Solution







Pain point of Hong Kong Health Services

Statistics:

According to the latest statistics (for 2017), around 90% of new cancer patients were diagnosed or treated in HA. In terms of waiting time for services at HA, the situation for patients diagnosed with colorectal, breast and nasopharynx cancers was virtually unchanged between 2017-2018 and 2020-2021 as about 10% of these patients had to wait at least 2-2.5 months before receiving their first treatment



90th percentile waiting time receive first treatment after Patients with colorectal cance Patients with breast cancer⁽²⁾ Patients with nasopharynx ca

Reference Link: https://www.legco.gov.hk/research-publications/english/2022issh07-cancer-prevention-and-treatment-20220224-e.pdf



e ⁽¹⁾ to	Number of days			
r diagnosis	2017-2018	2020-2021		
er ⁽²⁾	73	76		
	64	64		
incer	57	60		

OUR CONTINUING MISSION TO MAKE A CHANGE AND IMPROVEMENT OF HEALTH CARE SERVICES BY IT SOLUTION

SYSTEM PRIMARY FUNCTIONS



Rescheduling of Appointments (by Manual or Auto)



Patient

Auto Extension of

Future Planned

Appointments

Management



Extension of Treatment

5

Registration Management



2

Resource Management





Reports Generation

11

Real-time Dashboard





Auto Start/Stop of **Treatment**



Resource Utilisation Tracking (Real Time Dashboard)



System Interfaces with current hospital CMS system (Clinical management system (CMS) On-ramp)

Chemotherapy Treatment Appointment Scheduling System - Patient Journey Map



• Patient save time for waiting and unexpected incident case happened.





Patient Journey Map

- 1. Patient attend the appointment as per schedule
- 2. Register at the clinic counter
- System generate patient
- 4. Wait and notice the screen monitor to call, system will
 - show that patient at waiting zone
- 5. Nurse call patient to the correct treatment chair
- 6. System auto detect when the patient within the chair area
- 7. Patient start the treatment





3. System generate the queue ticket and UWB patient tags to



UWB base stations emit short-duration, high-frequency pulses of radio waves that can be used to measure the time of flight (ToF) of signals between the stations and UWB tags

HKC UWB Tag and UWB Base Stations (For Extension of treatment time and treatment status)

- 1. With UWB Real Time Location System (RLTS), the locations of each nurse and patient tag can be tracked live eliminating the need for bed/location tags.
- 2. Treatment can start (auto-start) when the nurse and patient tags come into the pre-defined zone of the Chair.
- 3. Extension of treatment time and treatment status can be done on tags.





Chemotherapy Treatment Appointment Scheduling System - Nurse Journey Map



opportunitie Strategies



Stage 11

System will auto adjust the according to the ADR extended duration of treatment and update for future appointments.

Stage 12

Patient return the Tags to dissociated zone. System to auto ends treatment and release chair for next patient.











 $\left(\begin{array}{c} \cdot \cdot \\ \bigtriangledown \end{array} \right)$

Feeling satisfied and awesome to the system. 1. Appointment status turn 'complete treatment'. 2. System able to track individual patient actual duration of the treatment session and adjust the future appointment request accordingly.

CTS & UWB Tags

CTS & UWB Tags



Nurse Journey Map

- 1. Nurse collect their personal UWB nurse tags when start the work.
- 2. Nurse register the patient treatment appointment and system will automatic slot in the entire circle schedule.
- 3. Nurse check the upcoming daily patient appointment in CTS.
- 4. Patient arrived in clinic and nurse do the registration for them.
- 5. System update the status "Registered" for the particular patient.
- Pharmacy department
 the drugs.
- 7. Nurse bring the patient to the assigned treatment chair.
- 8. System auto start tre into same range.
- 9. System will auto capture the duration of treatment completion for patient
- 10. Nurse noticed the particle tags for extension.
- 11. System will auto adjust the according to the ADR extended duration of treatment and update for future appointments.
- 12. System auto ends treatment and release chair for next patient.



Pharmacy department received the information from system, then start to prepare

System auto start treatment when patient is seated and the assigned nurse come

10. Nurse noticed the patient having Adverse Drug Reaction (ADR), then press the UWB

BENEFITS

1. Efficient and Optimal Resource Allocation: A scheduling system can optimize the allocation of chemotherapy treatment resources such as infusion chairs, medical staff, and equipment. It helps ensure that the available resources are utilized effectively, minimizing idle time and maximizing productivity.

2. Reduced Waiting Times: By implementing an efficient scheduling system, patients can experience reduced waiting times for chemotherapy treatments. The system can prioritize and schedule appointments based on various factors such as treatment urgency, patient preferences, and available resources. This helps to minimize delays and improve the overall patient experience.

3. Improved Patient Satisfaction: A well-organized scheduling system can enhance patient satisfaction by providing them with convenient and timely appointments. Patients can have a better understanding of their treatment schedules, reducing anxiety and uncertainty. Additionally, the system can enable patients to reschedule or cancel appointments easily, accommodating their individual needs and preferences.

4. Data Management and Analysis: A scheduling system can store and manage comprehensive data related to chemotherapy treatments, including patient records, treatment schedules, and resource utilization. This data can be analyzed to identify trends, optimize scheduling algorithms, and improve operational efficiency. It can also support research and quality improvement initiatives by providing valuable insights into treatment outcomes and resource allocation.





Software UI

¢. CTS									Ę	<u>е</u> р 8
Appointme	nt Scheduling	9							Appoir	tment Schedulin
Name			N	Date of Birth dd-mm-yyyy	Ê				Search	Decet
All Show 10	Planned 0 ~ entries	Registered	Lapsed	Treatment Completed	No Show	Cancel Draft	Force In SWalkin Facility Charge Summa	iry	e Print	a sms
Action	SMS/PRNT	Status 🕴	Appt Date	Patient	Arrival Time	Planned Appt Time	Visit Type 🕴	Walk In	Cycle 🕴	Day
-		DRAFT	27/07/2023	Tan Hong	11:00	16:00	FOLLOW UP	N	1	Thursday
-		DRAFT	27/07/2023	Tan Hong	11:30	16:30	FOLLOW UP	N	1	Thursday
-		DRAFT	27/07/2023	GOSHEN	11:30	16:30	FOLLOW UP	N	1	Thursday
-		LAPSED	27/07/2023	Alex Tan	15:00	16:00	FOLLOW UP	N	1	Thursday
-		LAPSED	27/07/2023	Akamaru Shinaji	19:00	19:30	FOLLOW UP	N	1	Thursday
-		LAPSED	27/07/2023	VIP Tyler	11:00	16:00	FOLLOW UP	N	1	Thursday
-		LAPSED	27/07/2023	Tan Hong	11:30	16:30	FOLLOW UP	N	1	Thursday
		REGISTERED	27/07/2023	Stanley Foong	16:00	17:00	FOLLOW UP	N	1	Thursday
-		REGISTERED	27/07/2023	Staley Dung	16:00	17:00	FOLLOW UP	N	1	Thursday
-		REGISTERED	27/07/2023	VIP Tyler	17:30	18:30	FOLLOW UP	N	1	Thursday
Showing 11	to 10 of 16 entri	ies (filtered from 307,56	54 total entries)					Pr	evious 1	2 Next

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Patient Management
Status Patient NRIC/HRN

Active

Patient NRIC/HRN Patient Name Appointment Date

Treatment

I Planned Registered Lapsed

Action	Patient Name	Patient NRIC	Gender	Date
	Shiro Maru	PAT004	Male	11/0
	Ginzo Araki	PAT005	Male	06/1
	Samantha Ho	PAT008	Female	11/0
	Ken Lee	T0694208Z	Male	16/0
	Anna Chan	G0913368U	Female	16/0
	Guru Wakandu	PAT012	Male	16/1
	James Bond	PAT013	Male	17/0
	BOT testg 03	PAT014	Male	16/1
	Bot4	PAT015	Female	16/1
	BOT07	PAT016	Male	16/1

Completed No Show

Showing 11 to 20 of 38 entries

Previous



Patient Management

1

Cancel







Software customized according to specific requirement to ensure the maximum fulfillment of the hospital's needs and requirements.

Reference Case

The National Cancer Centre Singapore (NCCS) offers a **one-stop holistic care** ranging from clinical services to patients, conduct clinical research and provides cancer education wholly directed to treatment and prevention of cancer.

At present, there are 2 Suites with 57 resources and treat about 150 to 160 patients daily. **The new NCCS, ATU will have 6 Suites with approximately 108 resources**. The workload is projected to double at opening of **new NCCS in 2022**, and will scale up as cancer incidence increases. Above all these, there are more than 300 protocols for chemotherapy treatment with various duration, treatment cycles and complexity.





National Cancer Centre Singapore SingHealth



National Cancer Centre Singapore

THANK YOU

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