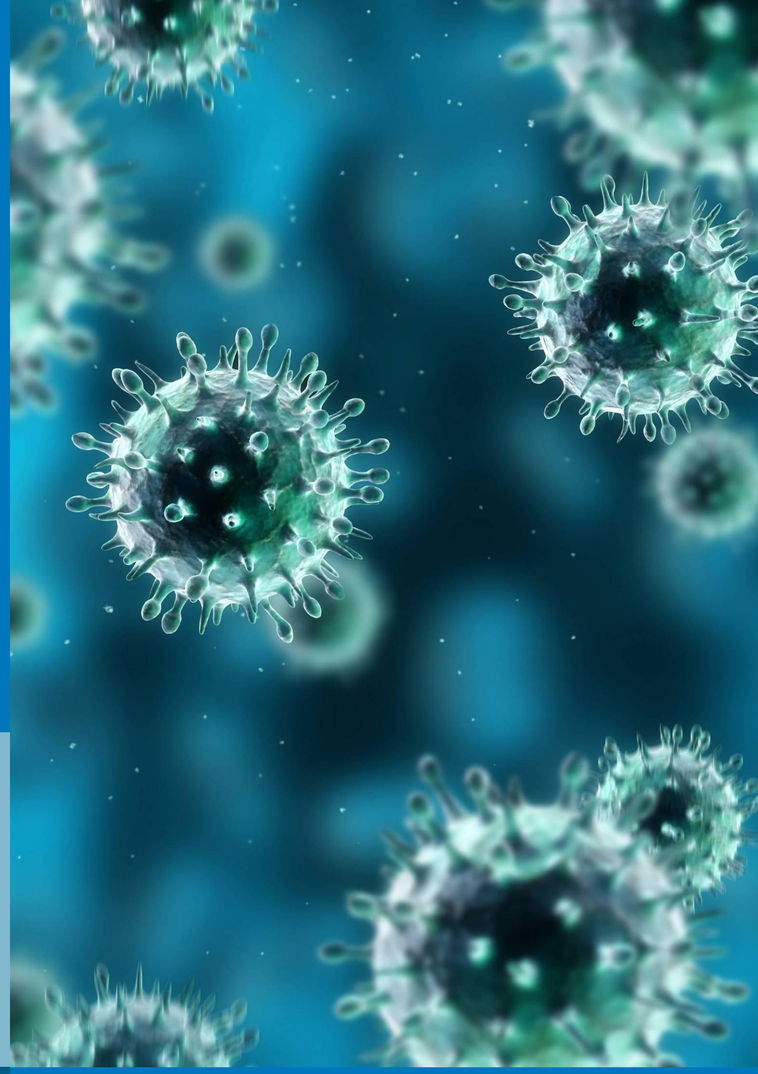
Improving Outcomes by Automating Clinical Documentation Workflows



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eHealth 2016 - Vancouver

CHU Sainte-Justine
Le centre hospitalier universitaire mère-enfant

Université de Montréal

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1. Learning objectives
2. Introduction to CHU Sainte-Justine
3. Our clinical information systems environment
4. Automating clinical workflows
5. Use Case: Respiratory Therapy
6. Outcomes
7. Challenges and lessons learned
8. Conclusion

1. Learning objectives

1. Describe current examples of how data is being used
2. Present challenges met and lessons learned at CHUSJ

2. Introduction to CHU Sainte-Justine

Our mission:
Improve health of children, teenagers and mothers of Quebec

<u>Every year</u>

3 500 births
10 000 surgeries
270 000 outpatient visits
83 000 emergency patients

2. Introduction to CHU Sainte-Justine

CHU Sainte-Justine is one of the top ten mother-child hospital centres in the world, in the following fields:

Perinatal care
Cardiac sciences
Hematology-Immunology-Oncology
Neurodevelopment
Musculoskeletal diseases and movement sciences
Health Promotion

Excellence provided by:

550 doctors and pharmacists
1 500 nurses
1 100 health care professionals
400 researchers and assistants
3 500 interns and students
450 volunteers

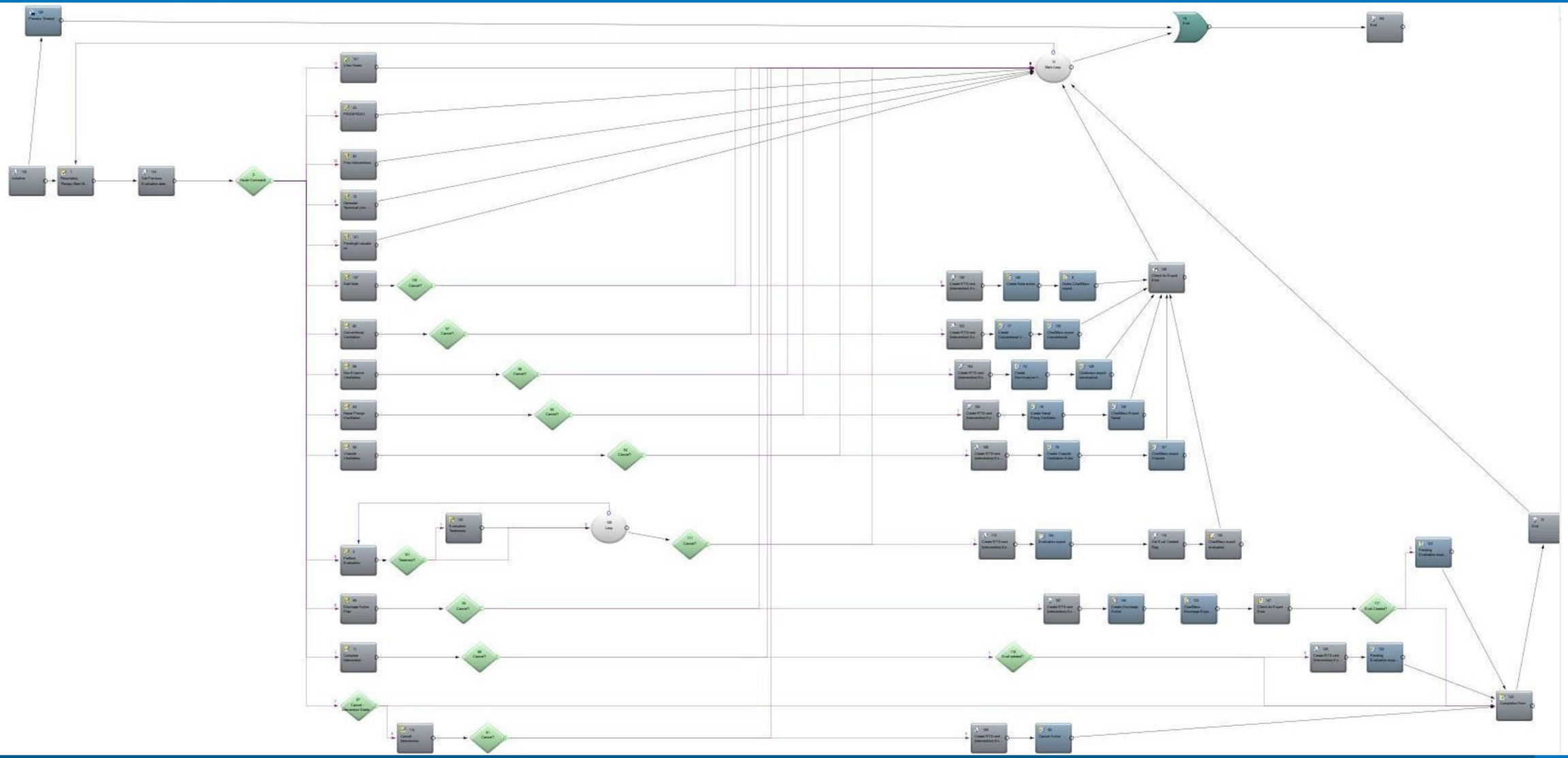
3. Our clinical information systems environment

- Repository for legal health record
- Ecosystem of 47 ancillary systems and specialised EMRs (PICU, ER, OR, Anaesthesia, etc.)
- 200 specialised applications producing reports (ECG, Ophthalmology, etc.)
- Over 1 400 standardised forms
- 300 decentralized clinical data bases of all types
- Regional EHR deployment 2009-2015 did not answer our specific needs
- Provincial EHR announced last fall
- **Computerized workflows and eForms are developed using a Business Process Management application**

4. Automating clinical workflows

- Improve clinical documentation by making information more complete, precise, readable and accessible
- Normalize documentation and streamline clinical workflows
- Integrate access to clinical documentation data for analytics, alerts, decision tools, dashboards, administrative and financial indicators, teaching, clinical and fundamental research, health promotion, etc.

4. Automating clinical workflows



5. Use Case: Respiratory Therapy

Purpose

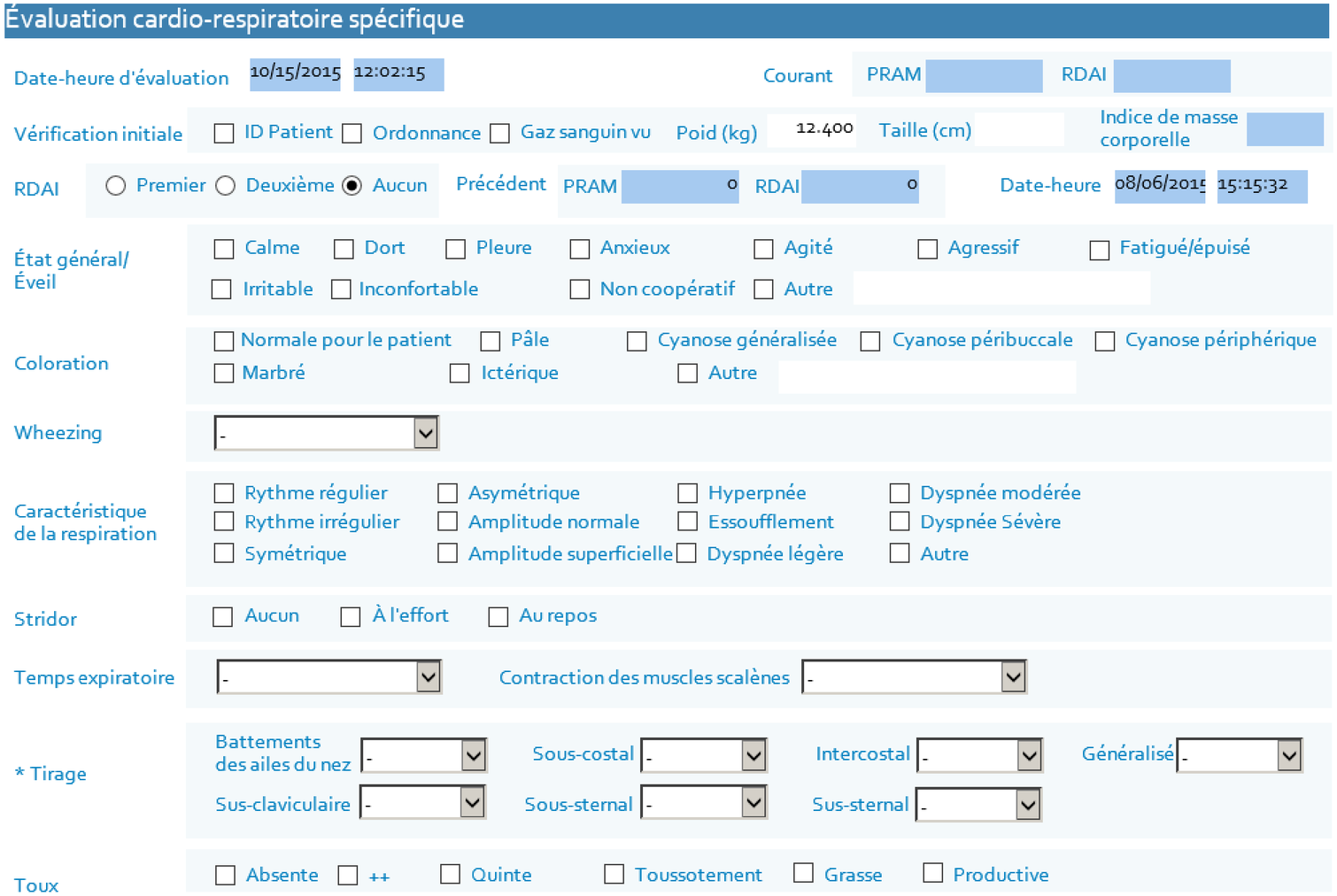
- Capture discrete information in database
- Automate workload calculation
- Use treatment results data to improve decision making
- Alert Research coordinators
- Computerize protocols for discharge orders and teaching

5. Use Case: Respiratory Therapy

Approach

- Review patient evaluation and treatment workflow
- Analyse documentation process
- Computerize workflow map, documentation screens and eForms with granular data
- Develop architecture based on information blocks and structured tables reusable for all needs
- Deployment and evaluation

5. Use Case: Respiratory Therapy



Évaluation cardio-respiratoire spécifique

Date-heure d'évaluation 10/15/2015 12:02:15 Courant PRAM RDAI

Vérification initiale ☐ ID Patient ☐ Ordonnance ☐ Gaz sanguin vu Poid (kg) 12.400 Taille (cm) Indice de masse corporelle

RDAI ○ Premier ○ Deuxième ◉ Aucun Précédent PRAM 0 RDAI 0 Date-heure 08/06/2015 15:15:32

État général/ Éveil ☐ Calme ☐ Dort ☐ Pleure ☐ Anxieux ☐ Agité ☐ Agressif ☐ Fatigué/épuisé ☐ Irritable ☐ Inconfortable ☐ Non coopératif ☐ Autre

Coloration ☐ Normale pour le patient ☐ Pâle ☐ Cyanose généralisée ☐ Cyanose péribuccale ☐ Cyanose périphérique ☐ Marbré ☐ Ictérique ☐ Autre

Wheezing -

Caractéristique de la respiration ☐ Rythme régulier ☐ Asymétrique ☐ Hyperpnée ☐ Dyspnée modérée ☐ Rythme irrégulier ☐ Amplitude normale ☐ Essoufflement ☐ Dyspnée Sévère ☐ Symétrique ☐ Amplitude superficielle ☐ Dyspnée légère ☐ Autre

Stridor ☐ Aucun ☐ À l'effort ☐ Au repos

Temps expiratoire - Contraction des muscles scalènes -

* Tirage Battements des ailes du nez - Sous-costal - Intercostal - Généralisé - Sus-claviculaire - Sous-sternal - Sus-sternal -

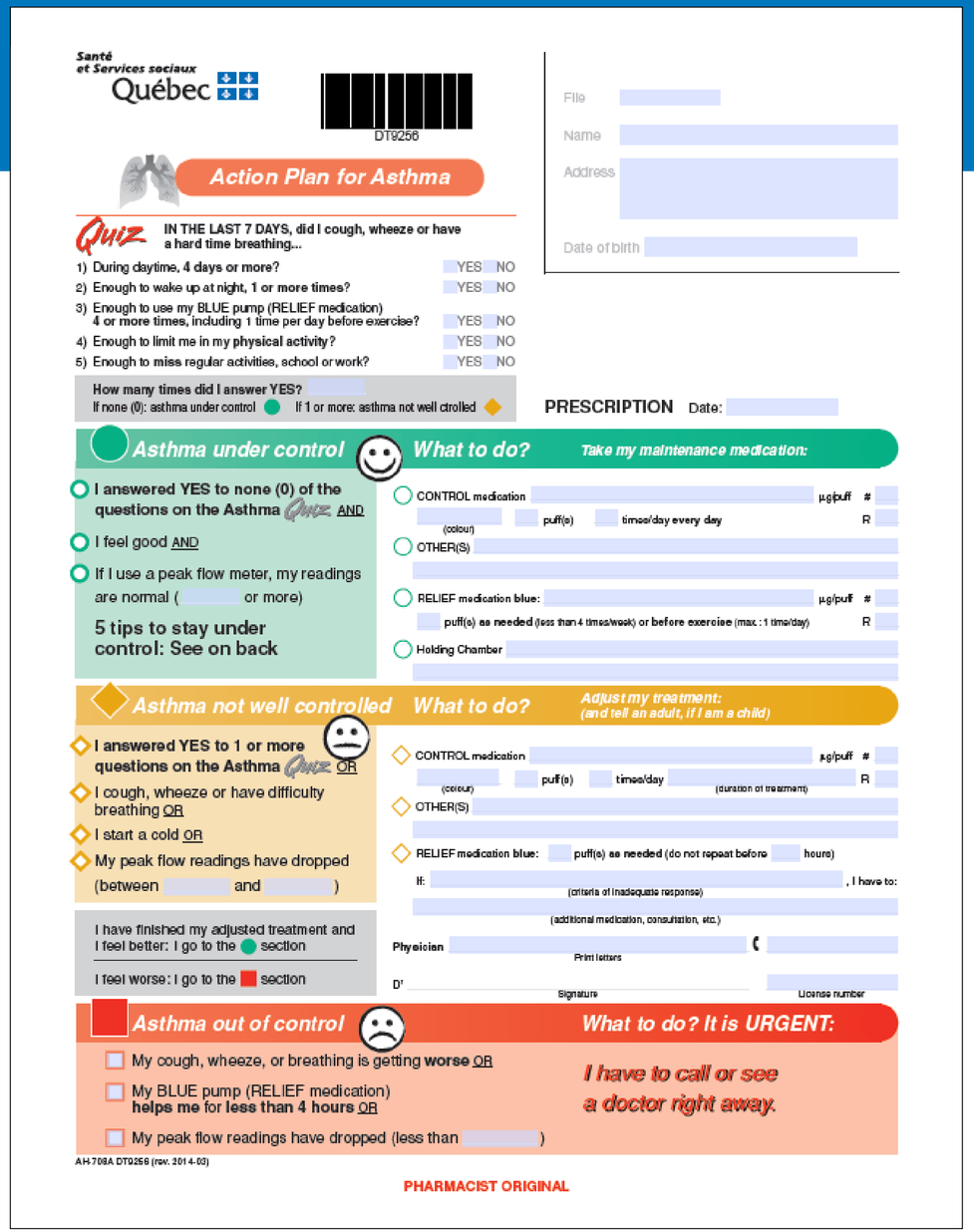
Toux ☐ Absente ☐ ++ ☐ Quinte ☐ Toussotement ☐ Grasse ☐ Productive

6. Outcomes

1. Discrete data available
2. Valuable metrics of time required to complete Respiratory Care procedures
3. Workload can be evaluated for scheduling, to produce stats, create reports, etc.
4. Important feedback for development team and software provider

6. Outcomes

5. Clinical decision support
6. Evidence based guidelines
7. Alert system to proactively notify the hospital's Research Coordinators of the arrival of patients that meet specific clinical research criteria
8. Automation of referral letters, discharge prescription, teaching or patient empowerment material like the "Action Plan for Asthma"



Santé et Services sociaux Québec

DT9256

File
Name
Address
Date of birth

Action Plan for Asthma

QUIZ IN THE LAST 7 DAYS, did I cough, wheeze or have a hard time breathing...

1) During daytime, 4 days or more? YES NO
2) Enough to wake up at night, 1 or more times? YES NO
3) Enough to use my BLUE pump (RELIEF medication) 4 or more times, including 1 time per day before exercise? YES NO
4) Enough to limit me in my physical activity? YES NO
5) Enough to miss regular activities, school or work? YES NO

How many times did I answer YES?
If none (0): asthma under control ● If 1 or more: asthma not well crolled ◆

PRESCRIPTION Date:

Asthma under control **What to do?** *Take my maintenance medication:*

- I answered YES to none (0) of the questions on the Asthma QUIZ AND
- I feel good AND
- If I use a peak flow meter, my readings are normal (or more)

5 tips to stay under control: See on back

- CONTROL medication µg/puff # (colour) puff(s) time/day every day R
- OTHER(S)
- RELIEF medication blue: µg/puff # puff(s) as needed (less than 4 times/week) or before exercise (max.: 1 time/day) R
- Holding Chamber

Asthma not well controlled **What to do?** *Adjust my treatment: (and tell an adult, if I am a child)*

- I answered YES to 1 or more questions on the Asthma QUIZ OR
- I cough, wheeze or have difficulty breathing OR
- I start a cold OR
- My peak flow readings have dropped (between and)

- CONTROL medication µg/puff # (colour) puff(s) time/day (duration of treatment) R
- OTHER(S)
- RELIEF medication blue: puff(s) as needed (do not repeat before hours)

If: (criteria of inadequate response), I have to: (additional medication, consultation, etc.)

Physician (Print letters)
Dr (Signature) (License number)

I have finished my adjusted treatment and I feel better: I go to the ● section

I feel worse: I go to the ■ section

Asthma out of control **What to do? It is URGENT:**

- My cough, wheeze, or breathing is getting **worse** OR
- My BLUE pump (RELIEF medication) **helps me for less than 4 hours** OR
- My peak flow readings have dropped (less than)

I have to call or see a doctor right away.

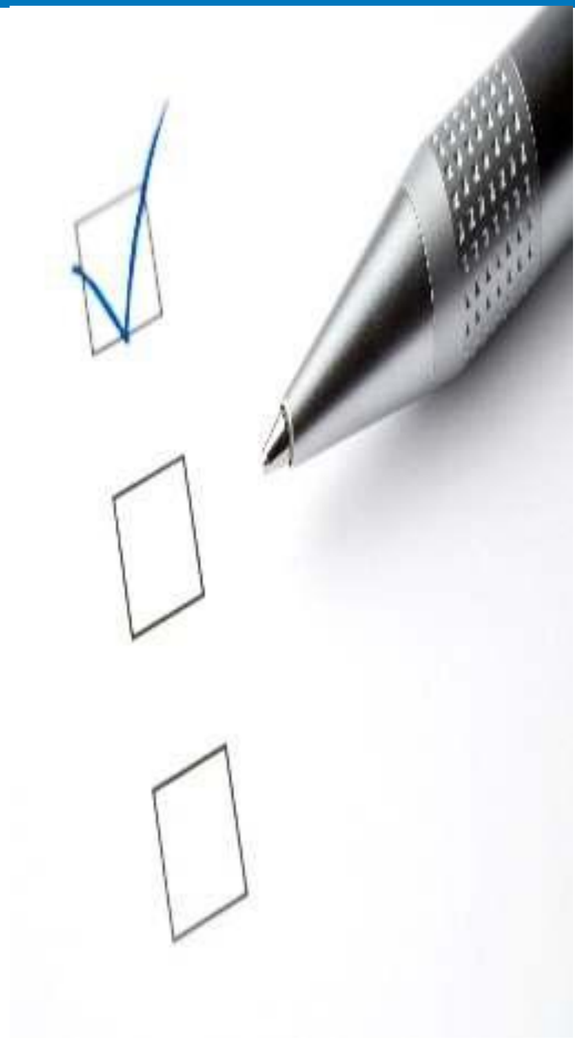
AH-708A DT9256 (rev. 2014-03)

PHARMACIST ORIGINAL

6. Outcomes

Satisfaction survey

- Lead by the CHUSJ Health Technology Assessment Unit
- 3 months post implantation
- Target group: 40 Respiratory Therapists
- Response rate: 62.5% (n=25)
- 4 sections: general questions, training on information systems, questions on computerized RT workflow, open questions



6. Outcomes

1. Global satisfaction:
    - The tool does not meet expectations, does not answer Respiratory Therapists' specific needs
    - Only 35 % Respiratory Therapists are globally satisfied with their computerized workflow

2. Improving clinical documentation:
    - 40 % perceived an improvement the quality of documentation

3. Streamline and automate clinical workflows:
    - Difficulty to compare last few patient evaluations
    - 72 % think it has worsen their clinical workflows

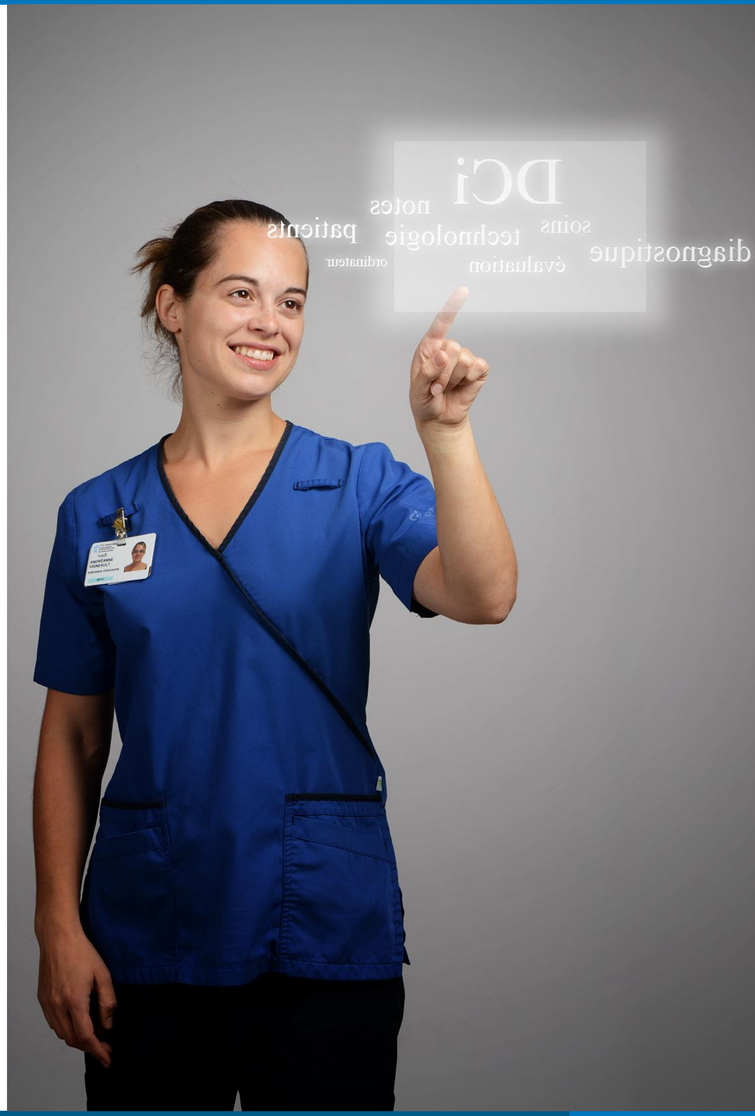
4. Data exploitability:
    - Need to develop a "user friendly" module to question DB instead of relying on IT to build queries

7. Challenges and lessons learned

1. Necessity to perform a detailed analysis to truly understand the clinical and patient needs
2. Developer’s understanding of the clinical workflow is critical
3. Application limitations and development tweaks can greatly impact modeled workflow
4. Continuous user feedback must be obtained during the development and deployment
5. Focus must be kept on the big picture to meet objectives

8. Conclusion

- Improved outcomes are not always visible to clinicians, making their buy-in more difficult
- User feedback at every step of development insures focus remains on their needs
- No matter how much time and effort you put in modeling the workflow, until it’s been beta-tested, there is no knowing how it will pass the test.



Thank you !

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