



TREAT Steward

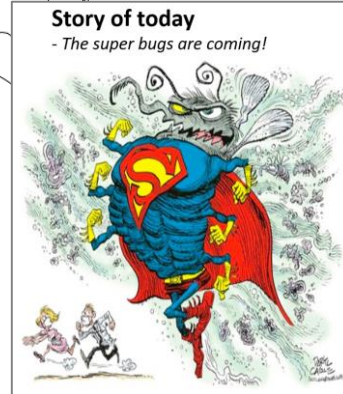
Antimicrobial Stewardship software with personalized decision support

Who am I?

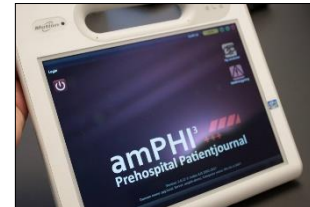
Aalborg, Denmark



Mads Lause Mogensen *M.Sc., Ph.D.*
Chief Executive Officer (CEO)



We are part of the Judex family



The Challenge of the “Super bugs”

- the microbiological battle toughens

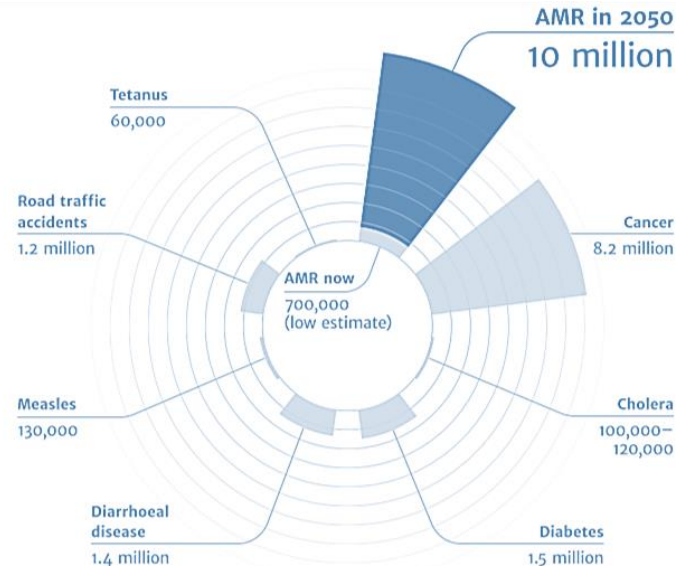
- **Antimicrobial resistance is one of the world’s most pressing public health threats**
 - *Two sided problem that in 2050 it will kill more people than cancer*
- **Excessive or inappropriate prescription of antimicrobials contributes to the problem**
 - *Today 30-50% of all antibiotic prescriptions are useless*
- **Antimicrobial treatment is given empirically before microbiology results are available**
 - *During the first days of hospitalization prescription is an “educated guess”*



By 2050, the death toll could be staggering

One person every three seconds

If AMR is not tackled now



The Core Elements of TREAT Steward

- binds everything together in one Antimicrobial Stewardship software tool

*The core of the System is a
Causal Probabilistic Model
Calibrated to each
Hospital to adjust for Local
Microbial Intricacies*



The Core Elements of TREAT Steward

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The core of the System is
Causal Probabilistic Modeling
Calibrated to each
Hospital to adjust for Local
Microbial Intricacies

Integration - structured
data is the key to success

Intelligent Adv

Early Warni
Score

Dosing
Assistant

Personalized
Antibiogram

My Patients

TREAT
SYSTEMS



The Core Elements of TREAT Steward

- binds everything together in one Antimicrobial Stewardship software tool

The core of the System
Causal Probabilistic
Calibrated to

Quality assurance and
specialist and A-team
review tool

Worklist

Sepsis presentation

Patient background

Site of infection

Summary and treatment

Review previous encounter

My patients

Patient ID

_____ - _____

Activate patient

Search in list

Search

Department

All

Restricted antibiotics

(Re)activate Treat

Awaiting ID approval

Change medication

Dispense

TREAT SYSTEMS

Patient Id	Name	D	Department	Prescribed antibiotics	DT	Selected in Treat	Patient status	Pharmacy	PDF
123456-1245	Peter Peterson	0	Acute ward				Activate Treat		
123457-1245	Anders Anderson	1	Medicine E			Cefuroxime IV?	Awaiting ID approval		
123458-1245	James Jameson	5	Medicine F			Cefuroxime IV	Change medication		
345678-1245	Jens Jensen	2	Acute ward	Cefuroxime IV	1	Cefuroxime IV	✓	Dispensed* (03/04-2014)	
456789-1245	Tom Tomsen	10	Acute ward	Levofloxacin IV	0	Cefuroxime IV	Change medication		
567890-1245	Peter Peterson	8	Medicine B	Meropenem IV	3	Vancomycin IV	Change medication		
678901-1245	Christian Christenson	2	Acute ward	Vancomycin IV	0	Vancomycin IV	✓	Dispense	
345901-1245	Hugo Smith	5	Medicine C	Piperacillin-tazobactam IV	2	Piperacillin-tazobactam IV	Evaluate culture results		
789012-1245	Peter Hansen	4	Acute ward	Cefuroxime PO	4	Cefuroxime PO	✓	Expired	
890123-1245	Leon Leonson	0	Acute ward				Activate Treat		
990123-1245	Jan Janson	0	Acute ward			Penicillin G IV	Activate Treat	Dispense	
901234-1245	Henrik Henrikson	1	Acute ward	Ampicillin PO	0		✓	Dispense	
012345-1245	Bill Billson	2	Medicine B	Meropenem IV	0	Meropenem IV?	Awaiting ID approval		

Show more patients

Activate selected patient

Tom Tomsen (456789-1245)

Antimicrobial treatments

Treatment	Start date	Stop date	Dose	X/day
Penicillin G IV	07-04-2014	14-04-2014	1 MU	3

Previous TREAT encounters

Date	Episode	Encounter	Comment	Physician	PDF
11-05-2014	2	1	Doctor's comment in text here...	Doctor1	
11-05-2014	1	2	Doctor's comment in text here...	Doctor1	
11-05-2014	1	1	Doctor's comment in text here...	Doctor2	

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The core of the System is a
Causal Probabilistic Model
Calibrated to each
Hospital to adjust for Local
Microbial Intricacies

Provide the perfect
management overview



Infection Journal

Intelligent Advice



DECISION
SUPPORT



Early Warning
Score



Dosing
Assistant



Personalized
Antibiogram



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456789-1245 Tom Tomsen (55y. male)

Worklist Sepsis presentation Patient background Site of infection **Summary and treatment** Review previous encounter My patients

Demography

Admission: 09/22/2014 08:46 Episode onset: 09/22/2014 08:46 Encounter: 09/22/2014 08:46 Department: Acute ward

Background

Place of acquisition Community Lung disease **COPD** Urinary catheter **Yes**

Vital parameters

Temperature **38.9° C** Temperature site Oral SBP 102 mmHg DBP **59 mmHg**
Heart rate 87 bpm Respiratory rate **22 /min** SaO2 oximetry 87 %

Local findings

Cough **Productive** Dysuria **Yes** Leukocyturia **Yes** Flank pain **Yes**

Lab values

WBC 15.6 K/uL	Neutrophils 8.2 K/uL	Hematocrit 40 %	Platelets 170 K/uL
Sodium 139 mEq/L	Glucose 130 mg/dL	Urea 43 mg/dL	Creatinine 1.33 mg/dL
Albumin 4.0 g/dL	AST 26 U/L	Total bilirubin 0.88 mg/dL	Alkaline phosphatase 99 mEq/L
pH 7.31	PvO2 33.9 mmHg	PvCO2 69.5 mmHg	HCO3 34.0 mEq/L
Lactate 28 mg/dL			

Microbiology

Date	Sample type	Location	Pathogen	Quantity/Result	ESBL	Amika	AmpI	AmpCI	Cftaz	Cftria	Cefur	Cipro	Colis	Erta
14/05/2014	Culture	Urine	E. Coli	10 ⁴ /ml	+	S	R	S	R	R	R	R	S	S
14/05/2014	Culture	Blood	No growth	0/3 bottles										

Sepsis meter

No sepsis Mild Moderate Severe Critical
33% 65%

Suggested diagnosis

Urosepsis 88%
Pneumonia 9%
Asymp. Bacteriuria 5%
Pyelonephritis 1%
Acute bronchitis 1%

In-vivo coverage: Pip-tazo IV [95%]

Pathogen	Covered	Not covered
E.coli (UTI)	69%	
Klebsiella (UTI)	16%	
Pseudomonas sp (UTI)	6%	
Proteus sp (UTI)	4%	
Citrobacter (UTI)	2%	

Recommended treatments

Treatment	Count
Amikacin IV	1261
Pip-tazo IV	864
Pen G IV + Genta	563
Ciprofloxacin PO	206
Ciprofloxacin IV	134

Select diagnosis and treatment

Antibiotic treatment

Treatment	Start date	Stop date
Penicillin IV	07-04-2014	14-04-2014

Treatment

Please specify your treatment and the reason for your choice

Piperacillin-tazobactam **4000** mg **3** a day
 - mg a day
 - mg a day

☐ Waiting for sample response
☐ Disagree with Treat's pathogen
☐ Want greater opportunity for coverage
☐ Want less risk of side effects
☐ Want lesser resistance

Please write a comment

Approve

Textual Guideline

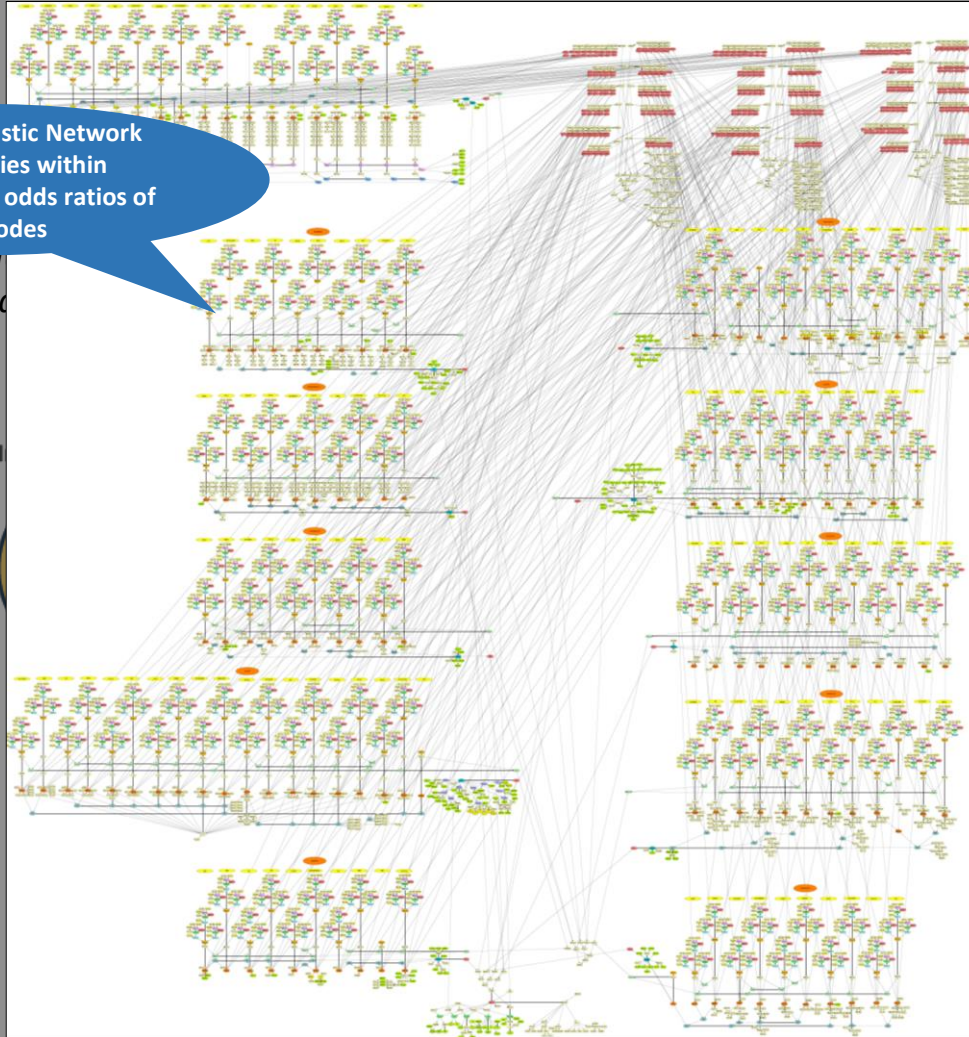


The Core Elements of TREAT Steward

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The
Hospital to adjust
Microbial Intrica

Causal Probabilistic Network
- The secret lies within
probabilities and odds ratios of
6000 nodes



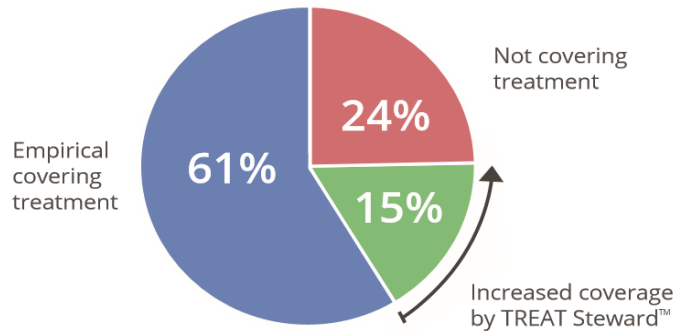
Clinical Results on Treatment Quality

- improves empirical coverage and reduces consumption of broad-spectrum antimicrobials

- Amazing findings based on research from 8000+ patients in e.g. Denmark, Israel, Italy and Germany

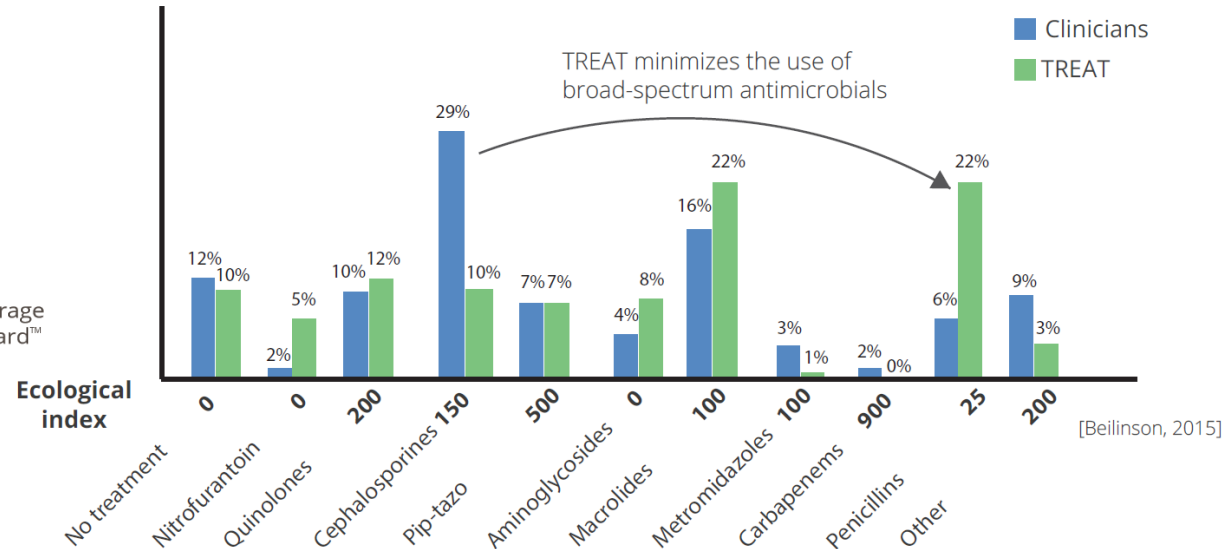
Immediate Clinical Effect:

Improvement of the empirical treatment quality by 15%



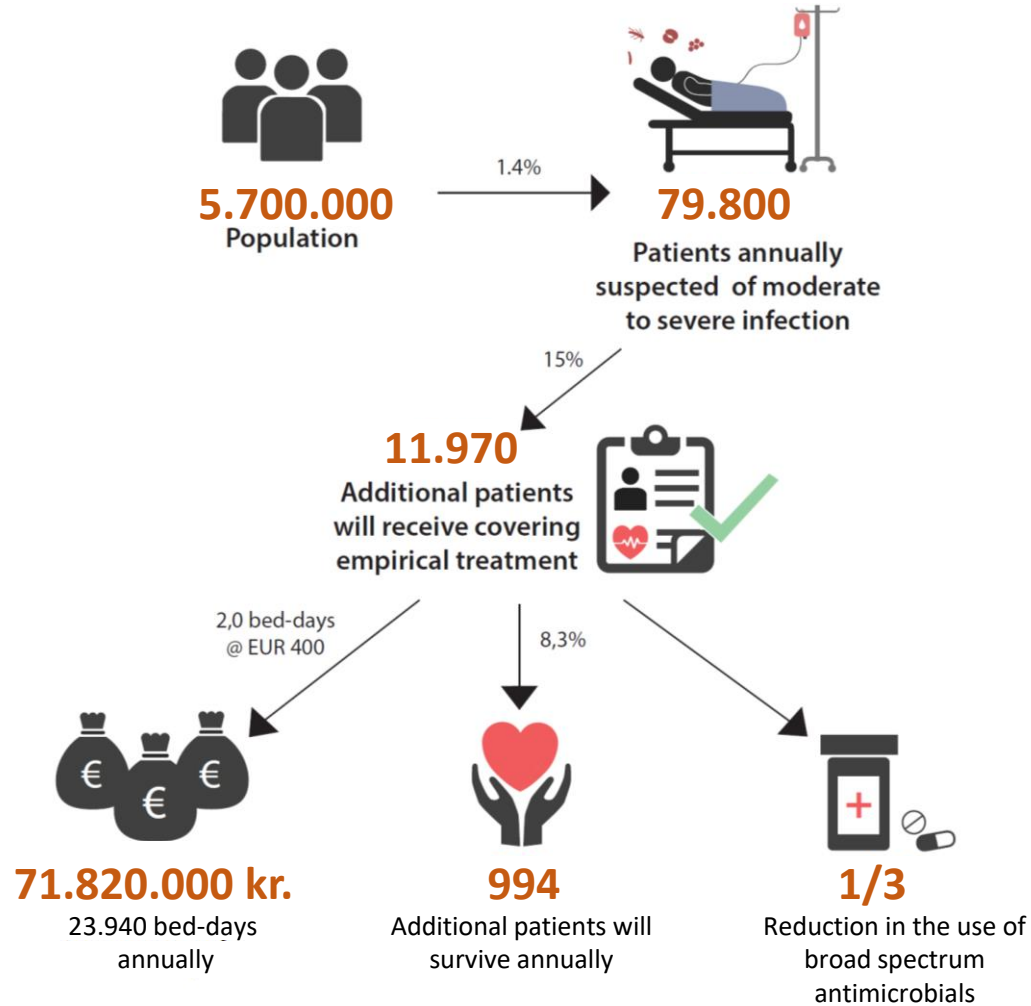
Long Term Positive Effect:

Reduced consumption of broad-spectrum antimicrobials by 33%



Economic Benefits

- TREAT Steward provides an excellent business case



Summary

- take home messages

- ✓ **WHO and ECDC say that antibiotic resistance is one of the most pressing public health threats**
... it will surpass cancer in 2050
- ✓ **An excellent solution that combines every aspect of antimicrobial treatment and stewardship**
... we have shown we can deliver
- ✓ **TREAT Steward has been validated successfully in clinical practice**
... it can save lives, money and reduce antibiotic consumption

LinkedIn

Mads Lause Mogensen



If you are interested or have additional questions please pass by CSC's booth.

