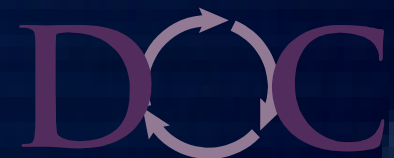


Drug optimisation clinics for patients with polycomorbidity: back to the future?

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Modern Medicine

- Improved survival of previously fatal diseases
 - Greater longevity
- Increasing prevalence of chronic disease
 - Polycomorbidity common
- Knowledge explosion
- Decline in generalists and rise of sub-specialists



Problem

- With increasing number of specialists
 - Poor communication between providers, increasing fragmentation of care
 - Potential for worse health outcomes
- Important issues such as end of life, nutrition not addressed
- Widening implementation gap in basic aspects of each specialty

Drug Optimisation Clinics

- Outpatients in tertiary hospital
- Staffed by generalists
 - Supported by a system to enable them to manage patients with multiple comorbidities
- Chronic heart failure as a model
 - Large number of co-morbidities, regular medications
 - Events common

Our system

- Holistic assessment
 - Patient questionnaire
 - Standardised nursing assessment
 - Patients rung to remind them to bring all medications
- Medical review
- Algorithm for evidence-based goal determination according to patient co-morbidity
 - Pre-agreed core goals for each co-morbidity

Goal determination on database

The screenshot shows a web-based interface for managing clinical goals. A red circle highlights the 'Depression' section, which includes a score of 8, a 'Print Assessment Form' link, and buttons for 'Initial goal review' and 'Goal update'. The interface also displays various clinical parameters like Renal (Creat: 112, Cr Cl: 73), Baseline (Hb: 115, MCV: 75), BP (summary: 135/78), Mini-mental (26), and Falls in last year (1-2). At the bottom, there are fields for 'Goal', 'Target', 'Striker', 'Priority', 'Scored?', 'GP (Co-striker)', and 'Comment', along with a 'Go' button and a 'Limit to doctors' dropdown.

Depression	Renal	Baseline	BP	Mini-mental	Falls in last year
Score: 8	Creat: 112 Cr Cl: 73	Hb: 115 MCV: 75	summary: 135/78 (Drop:15) HR:78	26	1-2

Buttons: Initial goal review, Goal update, Striker, Priority, Scored?, GP (Co-striker), Close Form

Form fields: Goal, Target, Limit to doctors, Limit Priorities, Incomplete, Ask: Agrees? Will do? (Yes No Yes No), Comment: Go, Dr, 1

Evidence based core goals

Education

Pharmacological

Lifestyle

Co-morbidity	Core goal
Atrial fibrillation	Offered anticoagulation
Cerebrovascular disease	Provide Heart Foundation "Stroke" brochure
	BP to target
	Correct antiplatelet therapy
	Lipids to target
Chronic renal failure	Maximum dose of ACE inhibitor unless contraindicated
	BP to target
Cognitive impairment	Consider investigation and referral to memory clinic
Chronic heart failure	BP to target
	Educated regarding 1.5 L fluid restriction (including caffeine)
	Thyroid function test performed in last year
	Annual Influenza vaccination
	Provide Heart Foundation "Living with heart failure" brochure
	Provide Heart Foundation "Be active everyday" brochure
	Educated regarding salt restriction
	Pneumococcal vaccination in last 5 years (maximum of 2)
	Fluid- diuretic action plan
	Home medication review
	Maximum dose of ACE inhibitor unless contraindicated
	Maximum dose of beta-blocker unless contraindicated
	Minimum dose of loop diuretic
	Individualised exercise plan
	Completion of resuscitation status form
	Patient performing daily weighs
Diabetes- Type II	Provide Heart Foundation "Cholesterol, Triglycerides and Heart disease" brochure
	Provide Heart Foundation "Be active everyday" brochure
	Correct antiplatelet therapy
	Pneumococcal vaccination in last 5 years (maximum of 2)
	Hba1c to target
	Lipids to target
	Provide Heart Foundation "How to have a healthy heart" brochure
	Annual Influenza vaccination
	BP to target
	Eyes check annually for diabetes
Falls history	Referral to falls prevention program

System (Cont'd)

- Multidisciplinary meeting
- GP letter
 - Includes goals and reply paid envelope
- Feedback from GP
- Finalisation of goals
- Patient seen until goal completed
 - Achievement of goals, date or reason for non-achievement documented

Drug Optimisation Clinic Model

1. Referral from wards
2. Holistic assessment:
3. Patient rung
4. Medical Assessment
5. Review of assessments/determination of goals
6. Multi-disciplinary meeting
 - Further clarification of goals
7. Letter to general practitioner

Please use this page and the reply paid envelope to provide feedback on corrections, or changes in medications or problem list

JOHN SMITH **DOB: 12/11/1945** **URNO: 7** **Appointment: 1/04/2008**

Referring doctor details Dr Thomas Jones
21 Eleanor Street
JONESTOWN SA 5342

Individualised Patient Management Plan

JOHN SMITH **DOB: 12/11/1945** **URNO: 7**

Active

chronic
Atrial fi
Diabet
- no c
Falls hi
Ischerr
myoca
Gout

We have reviewed this patient in our multi-disciplinary clinic and have decided on a number of goals for this patient. Some of these goals may not be appropriate, and others may already have been achieved, hence we would appreciate your feedback on these. Also, you may be comfortable to pursue some of these goals yourself, whereas others, you may want our clinic to pursue.

Please use the tick-boxes below and the reply paid envelope to provide us with feedback.

Inactiv

Osteoa

Previo
penicil
rosiglit

Use 1

Goal	Is goal appropriate?		Comment:	Who should pursue goal?		Comment:
	Yes	No		GP	Our Clinic	
-Referral to falls prevention program	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
-Maximum dose of beta-blocker unless contraindicated	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
-Maximum dose of ACE inhibitor unless contraindicated	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
-Lipids to target . TARGET: LDL<2 mmol/L	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
-HbA1c to target . TARGET: <7% if risk of hypoglycemia low	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
-Eyes check annually for diabetes	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	

Goals example after GP feedback

Initial goal review		Goal update		GP				Close Form
Goal	Target:	Priority:	Ask: Agrees? Will do?		Comment:			
			Yes	No		Yes	No	
Maximum dose of ACE inhibitor unless contraindicate	Go	Dr	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Completion of resuscitation status form	Go	N	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Educated regarding 1.5 L fluid restriction (including c	Go	N	2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Educated regarding salt restriction	Go	N	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Initial goal review		Goal update		GP				Close Form
Goal	Target:	Priority:	Ask: Agrees? Will do?		Comment:			
			Yes	No		Yes	No	
ask more about depression next appointment	Go	Dr	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
organize iron studies	Go	Dr	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
fluid- diuretic action plan	Go	Dr	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Maximum dose of ACE inhibitor unless contraindicate	Go	Dr	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Maximum dose of beta-blocker unless contraindicate	Go	Dr	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Minimum dose of loop diuretic	Go	Dr	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Referral to falls prevention program	Go	Dr	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
*	Go	Dr	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Home medication review	Go	Ph	2	No because	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	daughter managing medications well
annual fluvax	Go	Dr	1	Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Pneumovax in last 5 years (maximum of 2)	Go	Dr	1	Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Correct antiplatelet therapy	Go	Dr		Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
BP to target	Go	Dr	1	Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Drug Optimisation Clinic Model

1. Referral from wards
2. Holistic assessment
3. Patient rung
4. Medical Assessment
5. Review of assessments/determination of goals
6. Multi-disciplinary meeting
 - Further clarification of goals
7. Letter to general practitioner
8. Working through goals until completed
 - Medical
 - Nursing
9. Discharge from clinic

Model

goals subform



Depression **Renal** **Baseline**
Score: **Creat:** **Cr Cl:** **Hb:** **MCV**
8 112 73 115 75

Initial goal review

Goal update

Strik

Goal	Target:	Limit to doctor
thyroid function test performed in last year	Go	Dr
Pneumovax in last 5 years (maximum of 2)	Go	Dr
Offered anticoagulation	Go	Dr
Minimum dose of loop diuretic	Go	Dr
Maximum dose of beta-blocker unless contraindicate	Go	Dr
Maximum dose of ACE inhibitor unless contraindicate	Go	Dr
Lipids to target	Go LDL<2 mmol/L	Dr
HbA1c to target	Go <7% if risk of hypoglycemia low	Dr
H Pylori eradication	Go	Dr

goals subform



Depression **Renal** **Baseline** **B**
Score: **Creat:** **Cr Cl:** **Hb:** **MCV** **sum**
8 112 73 115 75 135/78 (Drop

Initial goal review

Goal update

Striker Priority

Goal	Target:	Limit to doctors	Limit Priorities
	Go	Dr	1

Individualised Patient Management Plan

JOHN SMITH DOB: 12/11/1945 URNO: 7

We have reviewed this patient in our multi-disciplinary clinic and have decided on a number of goals for this patient. Some of these goals may not be appropriate, and others may already have been achieved, hence we would appreciate your feedback on these. Also, you may be comfortable to pursue some of these goals yourself, whereas others, you may want our clinic to pursue. Please use the tick-boxes below and the reply paid envelope to provide us with feedback.

Goal	Is goal appropriate?		Comment:	Who should pursue goal?		Comment:
	Yes	No		GP	Our Clinic	
-Maximum dose of ACE inhibitor unless contraindicated	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
-Lipids to target . TARGET: LDL<2 mmol/L	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
-HbA1c to target . TARGET: <7% if risk of hypoglycemia low	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
-H Pylori eradication	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	

Dr S Shakib
Consultant, Clinical Pharmacology

Ischemic heart disease

gabapentin 300 mg three daily
metformin 500 mg twice daily
aspirin 100 mg daily
atenolol 50 mg daily

BP assessment
(average of 5 readings after 5 min rest)

Previous adverse drug reactions:
rosiglitazone : fluid retention

Average Sitting BP 138/78 Pulse 68

Standing BP: 135/73 Pulse

Ischemic heart disease

Lipids to target

LDL<2 mmol/L

Ischemic heart disease

Provide Heart Foundation "Getting Heart Smart ..." brochure

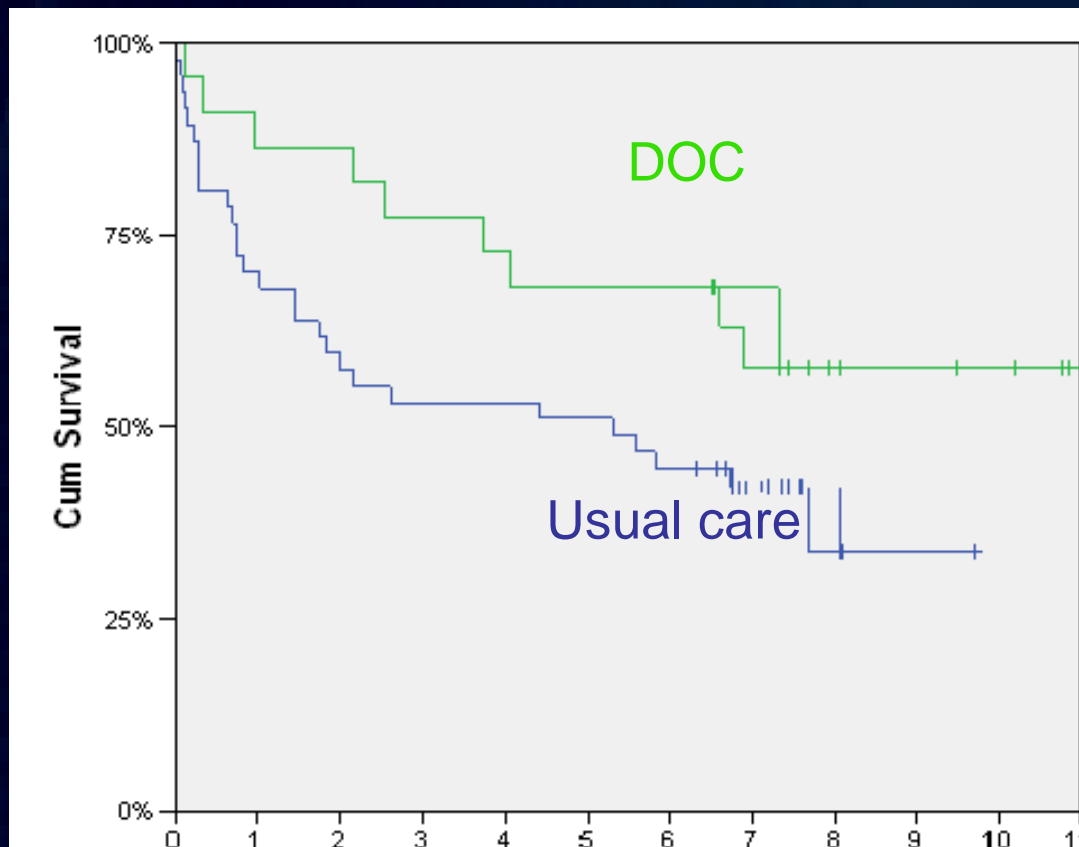
Ischemic heart disease

BP to target

Evaluation

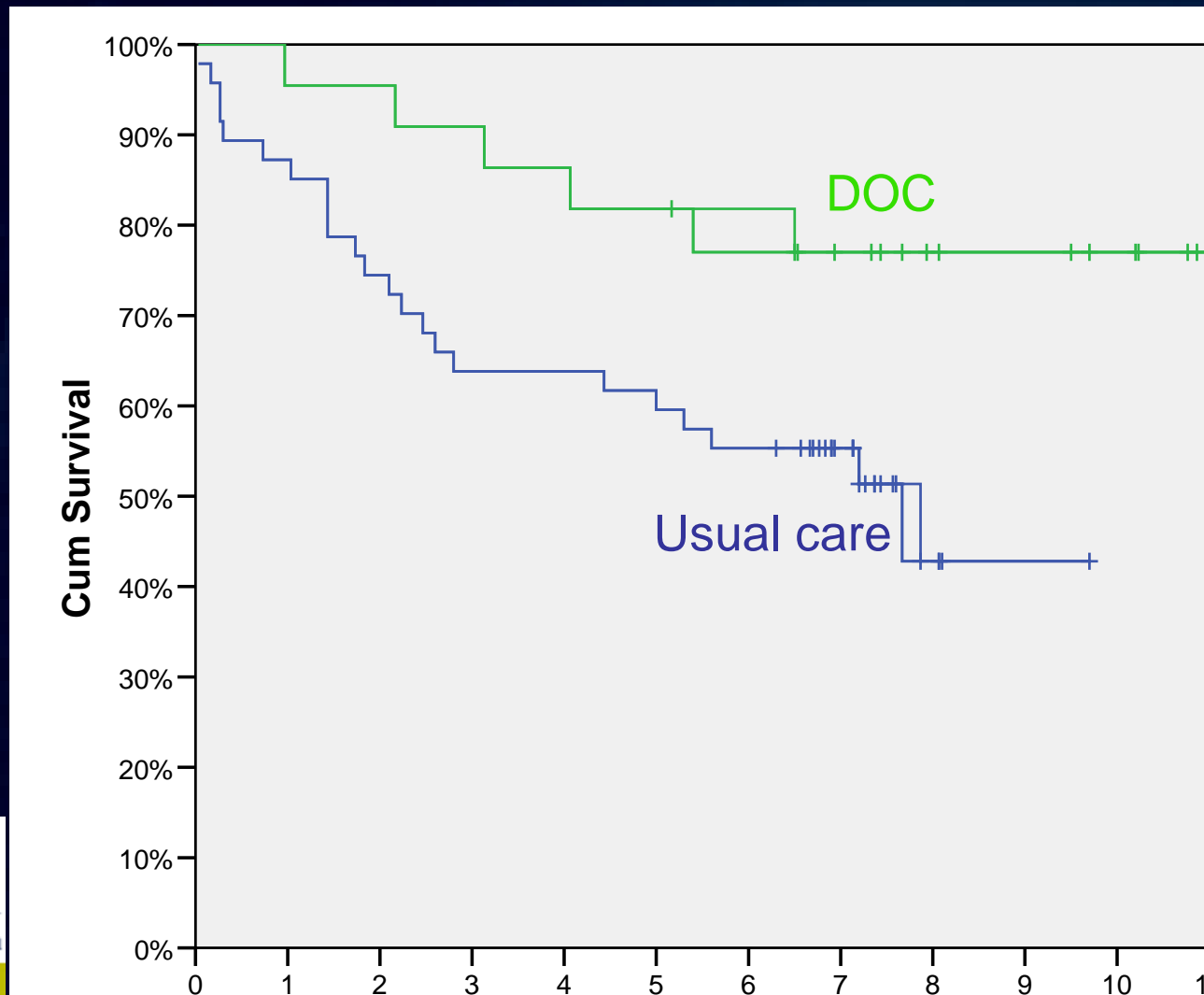
- Comparison of heart failure patients from 2 units actively recruited vs 2 control units

Death or any representation



P=.087

Non-cardiovascular presentation



P=.029

DOC
Months
Drug Prescription Clinics

Representations

	Usual care	DO Clinics	% reduction
Annual representation rate/patient	2.3	1.3	47%
Annual subsequent total LOS/patient	13.3 days	5.8 days	56%

Hospital finance data:

- \$4,900 savings for every patient followed up in clinic
- Important to target interventions at high risk patients

Conclusion

- Using predetermined evidence-based assessment tools and goals, created a system for optimal management of patients with multiple comorbidities
 - alternative to management by multiple sub-specialists
- Providing support for general physicians can result in improved patient outcomes and be cost saving!

Conclusions

- With aging population and increasing polycomorbidity, future of medical care likely to be with generalist model of care

Acknowledgements

- Fellowship funded by National Institute of Clinical Studies and South Australian Department of Health
- Drug Optimisation Clinic staff