How can models contribute to the broader discussion of UHC and TB

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Introduction

Management Sciences for Health (MSH) is a global nonprofit organization that partners with governments, civil society, the private sector, and health care workers to build resilient and sustainable health systems aimed at saving lives and improving the health of the world's poorest and most vulnerable people.

David Collins managed health projects for UK Save the Children for 10 years and has been with MSH for 30 years. He is a Chartered Accountant who works as health economist with a current focus on costing.

MSH Approach to Cost Modeling

- MS Excel, open source
- Designed for country planners and managers
- As simple as possible
- Minimize data collection
- Dynamic models that can be used for what-if analysis

Comprehensive package costing

Health centre costing using CORE Plus in many countries in over 25 years – eg Afghanistan results used in health intervention prioritization analysis

Hospital costing using HOSPICAL in Liberia, Cambodia, Rwanda, Burundi, Afghanistan, Uganda

Community Health Service Planning and Costing Tool - developed with UNICEF in 2016

New PHC costing tool – 2 year grant from BMGF

New PHC planning and costing tool

- Develop a tool to cost district PHC packages at community, health centre and primary hospital levels plus system management
- Cover all PHC services including TB, diabetes, malaria etc
- Bottom-up, ingredients based, open source – provider perspective
- Actual services and actual resources used
- Needed services & resources based on incidence and standard treatment protocols
- Will show:
  - If they spend enough for good quality of care?
  - If they met the need for services (whole package and 100% utilization)
  - How much additional funding is required to meet the need?
- Uses – advocacy, financing, allocation, budgeting, provider payments
- Pilot in 4 countries (other organizations can also pilot)

TB-specific costing / financing tools developed through TBCARE and SIAPS projects

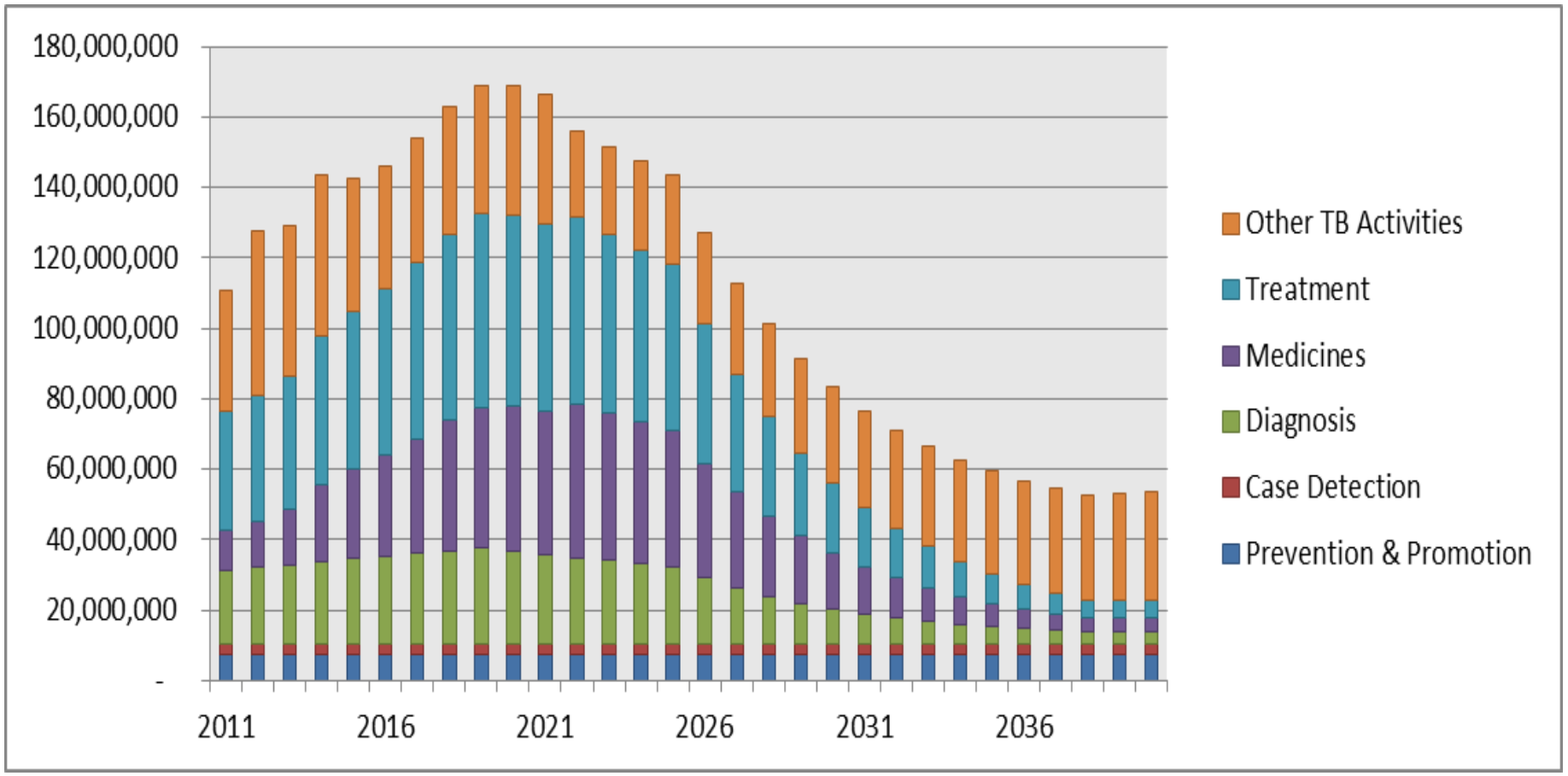
- TB Service Delivery Costing and Financing Tool
- TB Economic Burden Modeling Tool
- Tool for Analyzing the Economic cost of TB Treatment Interruption
- MDR-TB Cost-Effectiveness Analysis Tool

TB Service Delivery Costing/Financing Tool

1. Costing tool developed at request of NTP Indonesia
2. First for Java province and then for national level.
3. Then used to develop Costing/Financing Tool to prepare 30-year financing roadmap in December, 2014 (a)
4. Covers all elements of TB program from provider perspective.
5. Financing element covers funding from government, insurance, out-of-pocket and donors.

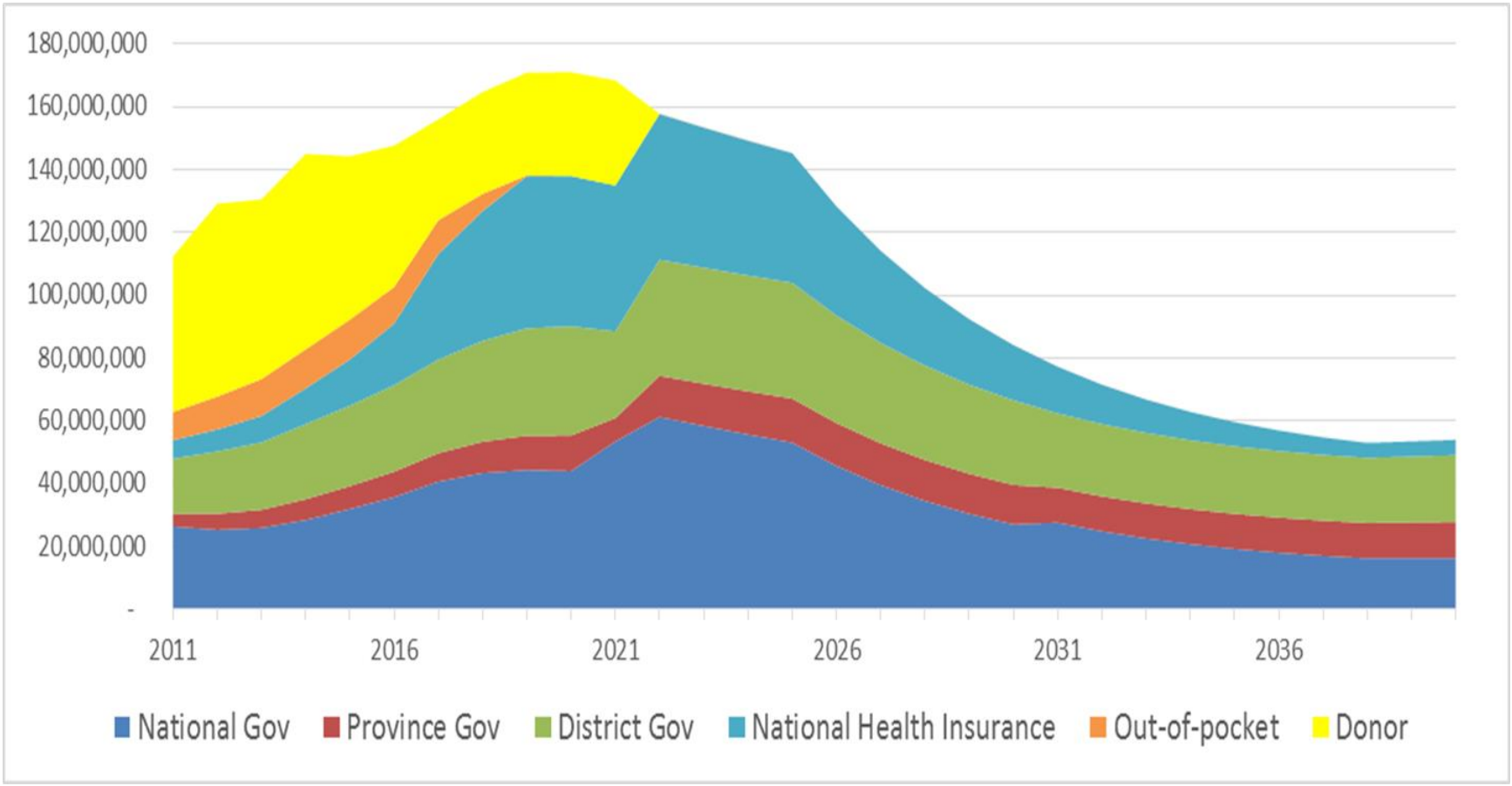
(a) Collins, D. and Hafidz, F. December, 2014. *Indonesia TB Financing Roadmap – 25 years from 2015-2039. TB CARE I – Management Sciences for Health.* Submitted to USAID by the TB CARE I Project: Management Sciences for Health.

TB - Total recurrent resource needs by program element Scenario 1 (US$)



Incidence and prevalence targets prior to 2014/15 prevalence survey provided by NTP - assumed to start falling in 2020

TB Control Financing Needs by Potential Funding Source – Scenario 1 (US$)



Based on incidence and prevalence targets prior to 2014/15 prevalence survey provided by NTP - assumed to start falling in 2020

TB Economic Burden Modeling Tool

- Developed for the Indonesian NTP to help advocate for more investment in TB control ("cost of treating plus not treating TB")
- Study conducted in 2013 before 2014/15 prevalence survey

D. Collins, F. Hafidz, D. Mustikawati. The economic burden of tuberculosis in Indonesia.
INT J TUBERC LUNG DIS 21(9):1041–1048 Q 2017 The Union http://dx.doi.org/10.5588/ijtld.16.0898

TB Economic Burden Model Indonesia (US $ millions)

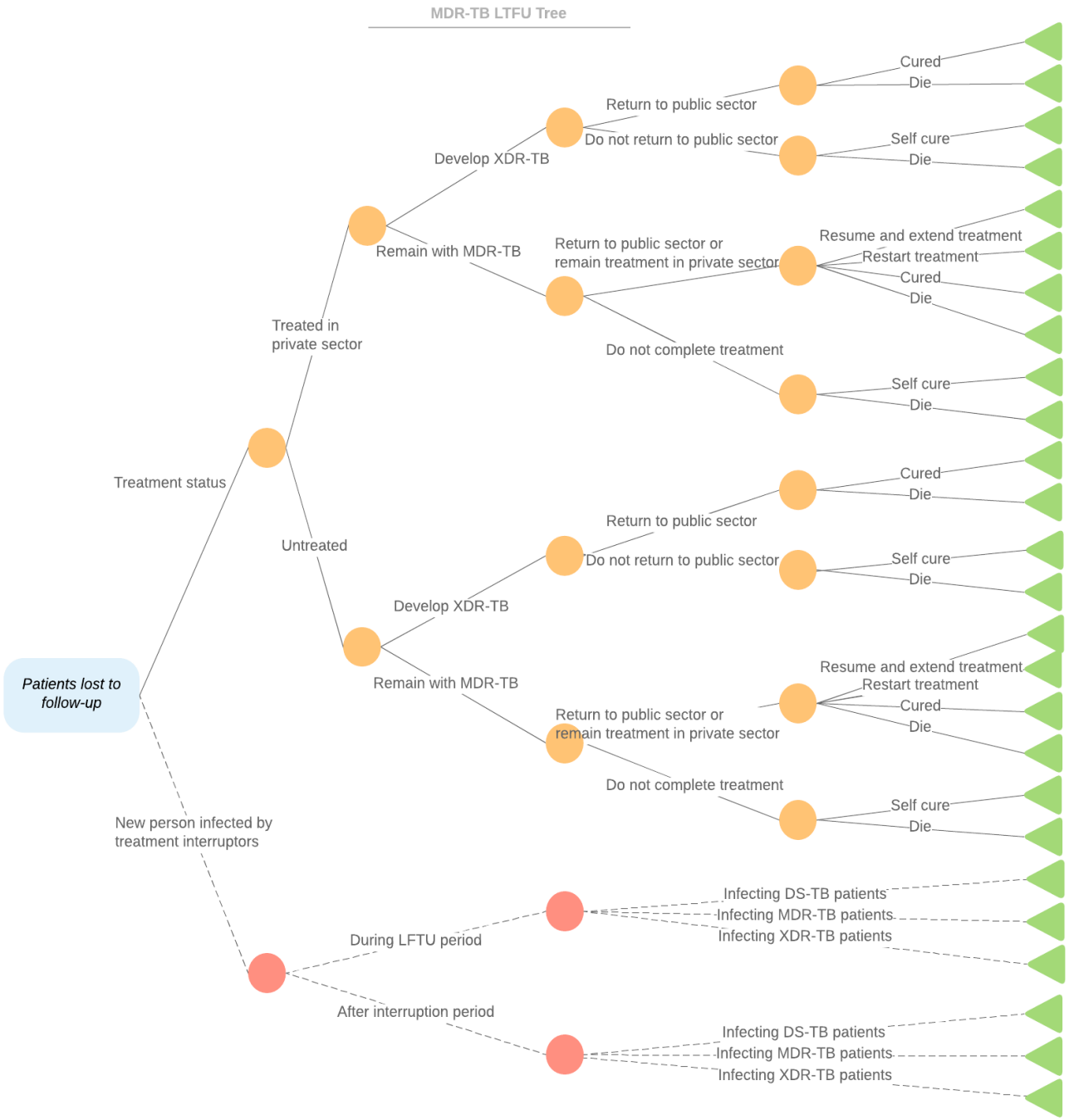
Scenario	2011 Actual total (US$ m)	2011 Actual per capita (US$)	Scenario total (US$ m)	Scenario per capita (US$)
TB case treatment rate	73%		93%	
MDR-TB case treatment rate	7%		31%	
Medical costs	$ 76	$ 0.33	$ 111	$ 0.47
Household costs	$ 8	$ 0.03	$ 8	$ 0.04
Loss of productivity due to disability	$ 481	$ 2.04	$ 238	$ 1.01
Loss of productivity due to premature death	$ 1,567	$ 6.63	$ 980	$ 4.15
TOTAL	**$ 2,134**	$ 9.03	**$ 1,339**	$ 5.67

Tool for Analyzing the Economic cost of TB Treatment Interruption

Developed through SIAPS project for the Philippines NTP to analyze the cost of treatment interruption due to medicine stock-outs and loss to follow-up (ref below)

Subsequently used in Kenya and by MIT.

Collins D, Lam H, Hafidz F, Antipolo J, Mangao P. 2016. Economic Cost of Non-Adherence to TB Medicines Resulting from Stock-Outs and Loss to Follow-Up in the Philippines. Submitted to the US Agency for International Development by the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program. Arlington, VA: Management Sciences for Health.


MDR-TB LTFU Tree
Patients lost to follow-up
Treatment status
Treated in private sector
Develop XDR-TB
Return to public sector
Do not return to public sector
Cured
Die
Self cure
Die
Remain with MDR-TB
Return to public sector or remain treatment in private sector
Resume and extend treatment
Restart treatment
Cured
Die
Do not complete treatment
Self cure
Die
Untreated
Develop XDR-TB
Return to public sector
Do not return to public sector
Cured
Die
Self cure
Die
Remain with MDR-TB
Return to public sector or remain treatment in private sector
Resume and extend treatment
Restart treatment
Cured
Die
Do not complete treatment
Self cure
Die
New person infected by treatment interruptors
During LFTU period
Infecting DS-TB patients
Infecting MDR-TB patients
Infecting XDR-TB patients
After interruption period
Infecting DS-TB patients
Infecting MDR-TB patients
Infecting XDR-TB patients

Impact of TB treatment interruption or non-return on morbidity and mortality (Philippines)

	DS-TB stock-outs of 1 month	DS-TB loss to follow-up of 3 months	MDR-TB loss to follow-up of 5 months
Number of patients whose treatment was interrupted	2,663	8,870	777
Number of patients who develop MDR-TB as a result of the interruption	266	887	0
Number of patients who develop XDR-TB as a result of the interruption	Not estimated	Not estimated	330
Number of patients who die as a result of the interruption	588	1,958	233
Number of additional persons who develop DS-TB as a result of the interruption	0	0	0
Number of additional persons who develop MDR-TB as a result of interruption	63	245	474
Number of additional persons who develop XDR-TB as a result of interruption	Not estimated	Not estimated	19

Economic impact of TB treatment interruption or non-return in the Philippines

	DS-TB stock-outs of 1 month	DS-TB loss to follow-up of 3 months	MDR-TB loss to follow-up of 5 months
Number of patients whose treatment was interrupted	2,663	8,870	777
Total estimated additional cost			
Provider cost	$ 1.5 million	$ 5.8 million	$ 4.5 million
Household cost	$ 19.7 million	$ 66.4 million	$ 8.4 million
Total	$ 21.2 million	$ 72.2 million	$ 12.9 million
Additional estimated additional cost per affected patient			
Provider cost	$ 573	$ 655	$ 5,733
Household cost	$ 7,425	$ 7,485	$ 10,875
Total	$ 7,998	$ 8,141	$ 16,608

TB CARE Costing Tools Guide

Questions about the tools (not about the data)

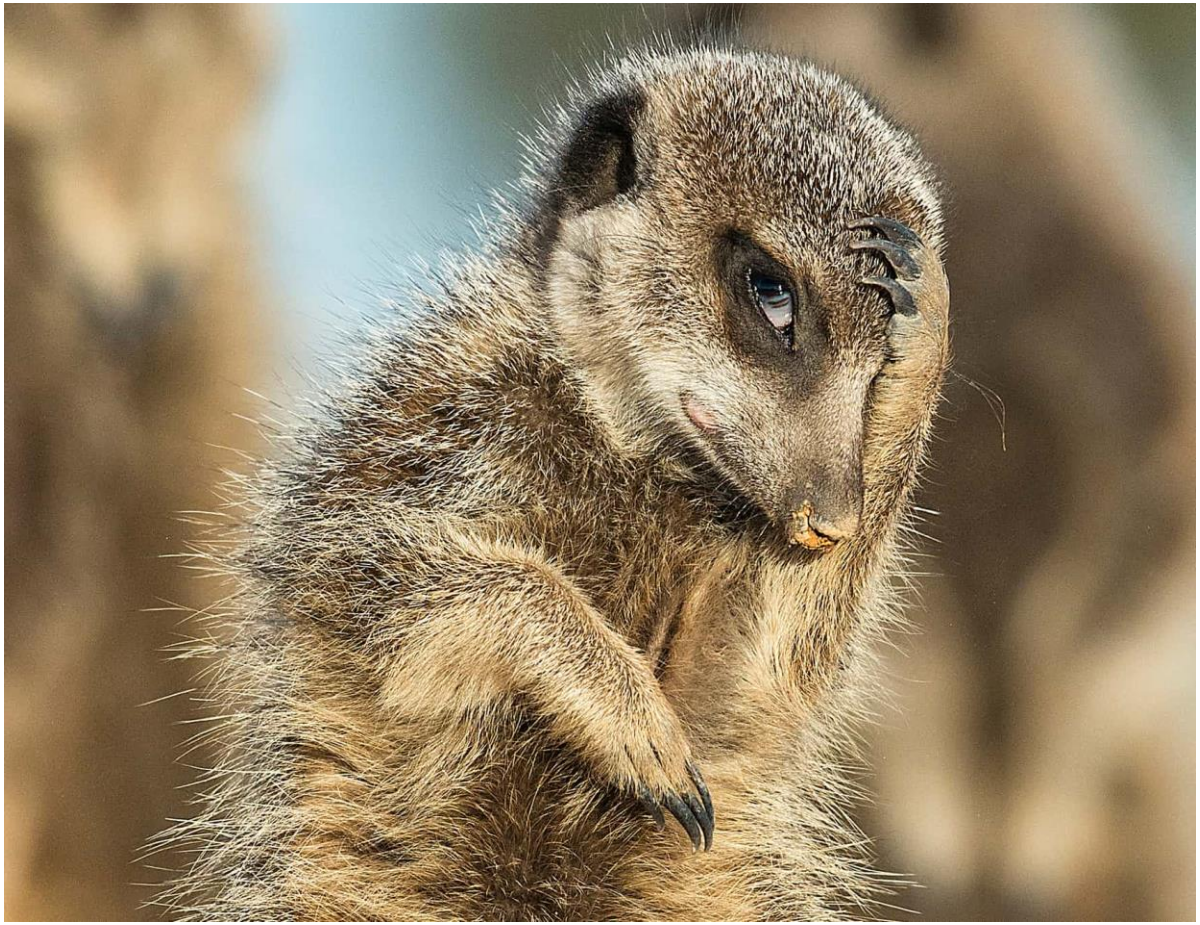


Photo by Brigitta Moser