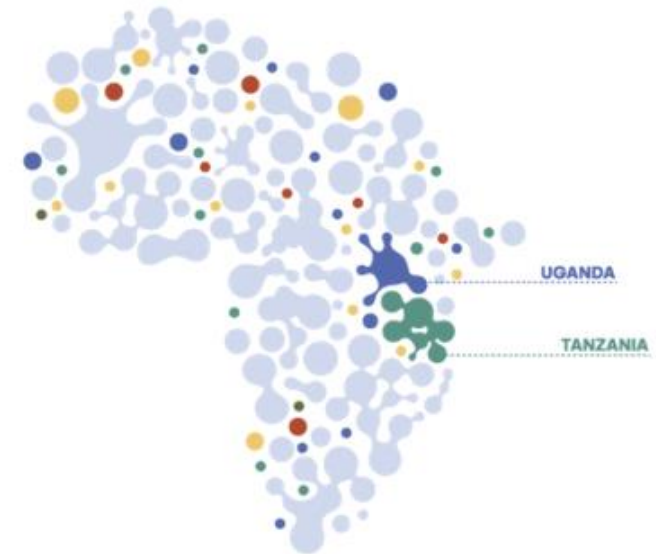


# Integration of chronic disease care: **INTE-Africa Study**

***What can we learn for Differentiated service delivery (DSD) for chronic disease?***

**Gerald Mutungi**

**Ministry of Health - Uganda**



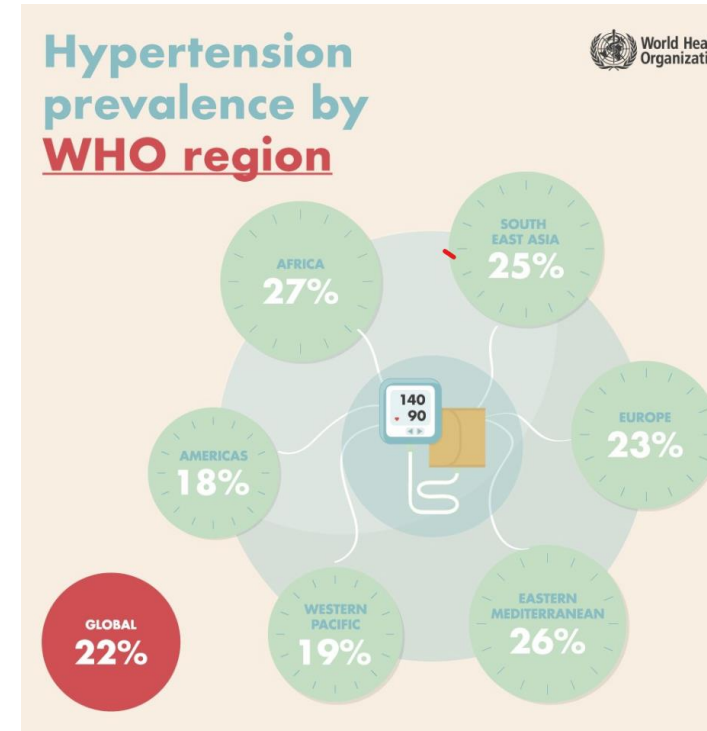
# RIAS Background: HIV and NCDs IN LMICs

- Diabetes and hypertension in 2023 is what HIV was in 2000

- leading to 2 million deaths annually,
- Premature mortality
- Increasing rapidly – large number of patients with multi-morbidity
- Poor patient outcome
- Shortage of drugs and other commodities

- Yet HIV mortality has reduced 5-fold since 2000 from 2 million deaths to less than 0.5m

- WHO, UNAIDs & others have recommended Integration of HIV & NCD care to leverage strong HIV systems



**537 million**  
adults are living with diabetes

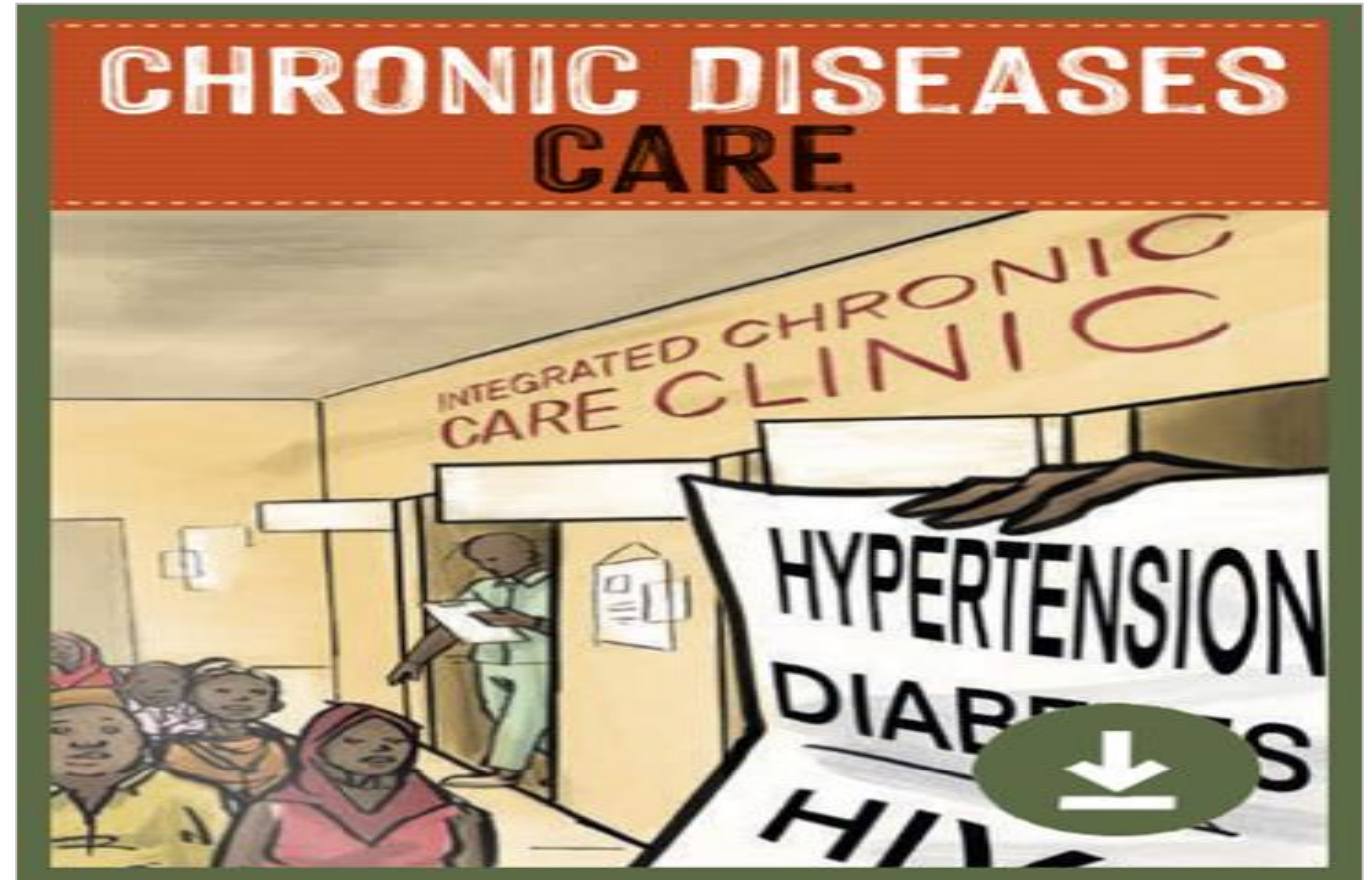
**3 in 4**  
adults with diabetes  
live in low- and middle-income countries



# WHAT IS INTEGRATED CARE? - WHO

“bringing together inputs, delivery, management and organization of services related to diagnosis, treatment, care, rehabilitation and health promotion” to “improve access, quality, user satisfaction and efficiency”

*WHO, 2001*



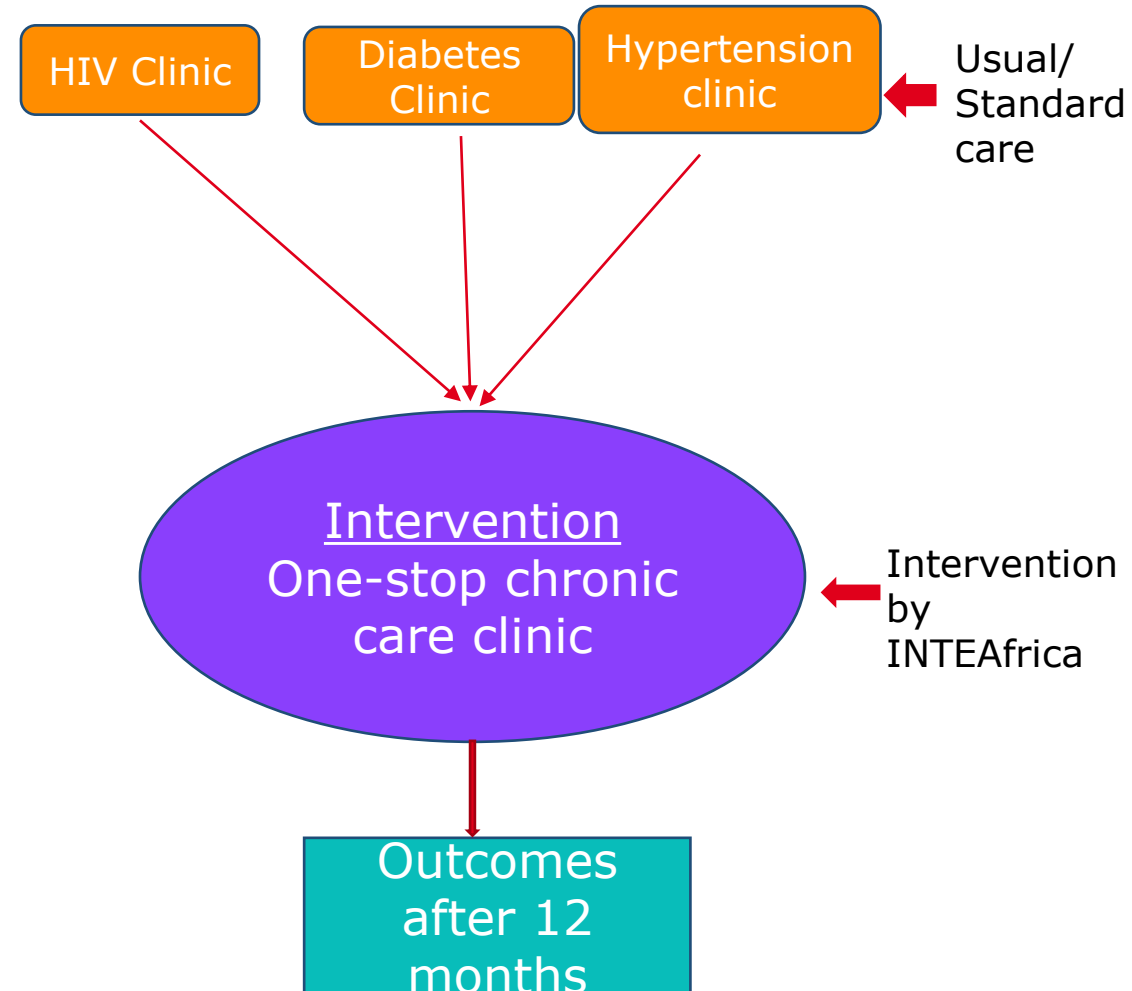
# INTE-Africa study: Key research questions

- Does integrated healthcare services adversely affect retention in care for people with diabetes or hypertension as compared with vertical care?
- Does integrated healthcare services adversely affect HIV care outcomes?
- What are the perceptions, attitudes and experiences of patients in integrated care?
- What is the cost of implementing integrated care vs vertical care?



- **Design:** pragmatic cluster-randomised control trial
- Randomised 32 primary healthcare facilities in Tanzania and Uganda (ratio 1:1)
- 
- **Population:** Patients  $\geq 18$  years with any of HIV-infection, diabetes, hypertension
- **Intervention/control:** *Integrated vs vertical care*
- **Follow up time:** 12-months
- Collected data on clinical outcomes, costs and patient perspectives of integrated care

## INTE-Africa study - Integrated care Model





# INTE-Africa study outcomes

## How the study defined patients as controlled/established on treatment

Criteria for established on treatment	HIV	HTN	T2DM	
categorisation	Suppressed viral load (VL)	Controlled blood pressure (BP)	Controlled blood sugar (FSB)	Normal HbA1c level
Measurement	VL ≤ 1000 copies per ml	BP ≤ 140/90	FSB ≤ 7 mmol/L or 126mg/dl	HbA1c < 6.5%
Duration on treatment	≥ 6 months	≥ 6 months	≥ 6 months	≥ 6 months
Other	Has no advanced disease	Has no complications; Stroke, MI,	Has no complications; diabetic foot, DKA	

# IAS **INTE-Africa study intervention** **WHERE?**



Patient with either single or multiple condition	Where was Registration on arrival	Where was clinical evaluation done	Where was drug refill done	Where were Laboratory services	Where was data collection and storage
HIV only Hypertension (HT) only Diabetes (DM) only HIV+HT HIV +DM DM+HT HIV+DM+HT	All patients waited in same waiting area and triage point	Patient seen by one clinical care team at single visit at facility even if a patient had more than one condition  Given single return appointment even if they had more than one condition	Same dispensing point/ pharmacy and team	Shared same laboratory space/room and equipment	Similar data collection tools (blue care card) and stored in same room where possible.  Not able to merge electronic data system



# INTE-Africa study intervention

## WHEN?

	WHEN clinical visit	WHEN refill visit	Comment
HIV	Every 1-3 months	1-3 months	Depending on adherence, most recent VL suppression and other factors
Hypertension	Monthly	Monthly	Option for longer duration available but due to inadequate NCD drug stocks
Diabetes	Monthly	Monthly	''
Patients with more than one condition	Seen Monthly	Refilled Monthly for NCD drugs and 3 monthly for ARVs	This was also due to inadequate stock for NCD drugs

# INTE-Africa study intervention

## WHO?

Patient with either single or multiple condition	Clinical visit (Who evaluated the patient clinically)	WHO provided drug refill
<p>HIV, Diabetes Hypertension or more than one condition</p>	<ul style="list-style-type: none"> <li>• Facility health care worker/ government employed ( Medical officer, clinical officer or nurse)</li> <li>• INTEAfrica Study did not employ additional staff for the facility but worked with existing staff</li> <li>• Health facility staff were given refresher trainings in HIV and NCD</li> <li>• In first months, staff from NCD and HIV clinic reviewed patients together to support each other until they were confident</li> </ul>	<ul style="list-style-type: none"> <li>• Same facility dispensing staff (dispenser of nurse)</li> <li>• Working with the expert clients</li> </ul>

# IAS **INTE-Africa study intervention**

## **WHAT?**



These activities were carried out in both arms; usual/standard care and intervention arm

- **Community and Stakeholder engagement:** meetings (policy makers, patients, health care workers, implementing partners and CSOs)
- **Supervision:** by the ministry of health team and regulatory bodies
- **Training:** Refresher training and CMEs for health care providers
- **Buffer supply for drugs:** only for first three months and there after patients either used out of pocket/ joined patient clubs or used insurance
- **Peer support:** Patient involvement in educating other patients, dispensing , triage
- **Team management:** Study team worked very closely with the facility management team – did not provide salary top-ups but provided airtime for coordination to the incharges
- **Phone call reminders:** if patient missed appointment

# Key findings: Baseline characteristics

<b>Total (n=7028)</b>	<b>Integrated Arm</b>	<b>Standard of care Arm</b>
<b>Number enrolled, n(%)</b>	3,438	3,590
Age, mean (SD) years	50.8 (14)	50.3 (13)
Sex, number female (%)	2,571 (75)	2,579 (72)
<b>Body Mass Index, all participants, mean (SD)</b>	25.9(6)	25.8 (6)
<b>Disease condition, n(%)</b>		
HIV alone	49%	46%
Hypertension alone	26%	25%
Diabetes alone	5%	8%
HIV and Hypertension	7%	6%
HIV and Diabetes	1%	1%
Diabetes and Hypertension	9%	12%
HIV, Diabetes and Hypertension	1%	1%

# Key findings: Retention in care

Proportion alive and still in care at end of study	Integrated Arm	Vertical Arm
Participants with diabetes and/or hypertension, n/N (%)	1234/1406 (87.8)	1450/1622(89.4)
Participants with diabetes only, n/N (%)	142/181(78.5)	281/308(91.2)
Participants with hypertension only, n/N (%)	805/903(89.1)	781/882(88.5)
Participants with living with HIV, n/N (%)	1853/2023(91.6)	1858/1964(94.6)

# Key findings: Viral load suppression

	<b>Integrated Arm</b>	<b>Vertical Arm</b>
Plasma Viral Load <1000 copies per ml (%)	1694/1741(97.3)	1710/1755(97.4)
Plasma Viral Load <400 copies per ml (%)	1625/1739(93.4)	1645/1752(93.9)

In both arms, viral load suppression was very high and comparable with the national and global rates.

# Key findings: Blood pressure and Blood sugar control

<i>Blood pressure control among participants with hypertension</i>	<b>Integrated care arm</b> (N=1409)	<b>Standard of care arm</b> (N=1623)
Blood pressure <140/90 mmHg, — no./total no. (%)	588/1044 (56.3)	581/1230 (47.2)
Fasting blood glucose $\leq$ 6.9mmol/l, — no./total no. (%)	49/190 (25.8)	94/467(20.1)

# Conclusion 1: Retention and VL suppression

- In both arms, we found high retention in care
- Important to note is that integration did not affect retention in care as was initially feared that patients would drop out due to stigma.
- Integration did not adversely affect the HIV outcomes. Results similar to the national and global retention and viral load suppression rates
- Slight improvements in blood pressure and blood sugar control in the integrated care arm compared to the vertical arm

## Conclusion 2: Stakeholders perspectives

- Integrating HIV, diabetes and hypertension care enables reduction in duplication in service provision, reduction in HIV stigma and efficient use of limited resources

*"I have no problem with it because, we are all sick. Me I'm very comfortable. You can't know about the disease unless the person has told you what they are suffering from, we are all sick..."* (Patient in Uganda)

- Integrated care facilitated greater sharing of knowledge among patients and more comprehensive health education on chronic conditions

*"But if we sit together as patients of HIV, diabetes or hypertension, we may counsel each other, talk about the causes of the conditions that we have and you might know what to do to avoid getting the other condition"* (Patient, Female, HIV-UG)

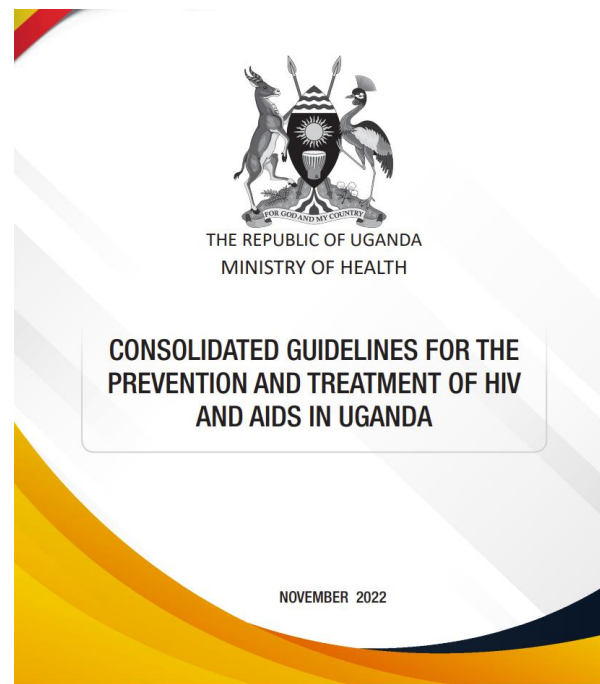
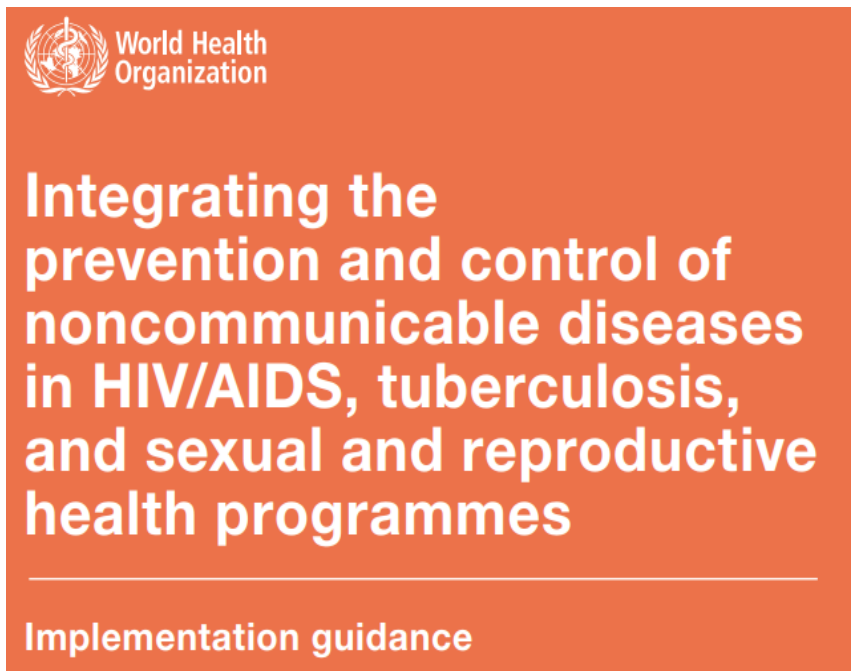
- Although the model significantly reduced stigma, it did not eradicate it, or remove the service-level challenges and societal discrimination of HIV patients.

## Conclusion 3: Health economics

- Conducted a provider perspective economic evaluation to estimate the average monthly cost per patient for the trial population
- All costs are reported in 2021 International Dollars (Int \$)
- Average monthly provider cost per participant with multiple conditions in the integrated care arm was significantly lower than in the standard care arm
- Uganda: cost savings ranged from Int\$ 22.66 (95% CI -6.19, 51.52,  $p=0.059$ ) per participant per month for participants with HIV and diabetes to Int\$ 68.28 (95%CI 38.22, 98.33,  $p<0.001$ ) per participant per month for participants with HIV, diabetes, and hypertension
- Costs did not differ significantly between the two arms for participants with single conditions

## Lessons learned for DSD

- Patients with chronic disease once stable/controlled on treatment can be managed at primary or lower level health structures with good supervision and support
- Patients welcomed the integration especially those with more than one chronic condition
- It is cost saving to integrated chronic care especially for patients with multiple conditions
- Some small additions to care such as phone call reminders for NCD patients who have missed a visit like it is done for HIV may contribute to improvement in retention in care
- It is possible to utilise same resources/staffing as long as there is capacity building and proper planning
- Important to empower of patients to take charge of their health even during drug stock outs
- Peer support remains crucial in chronic care



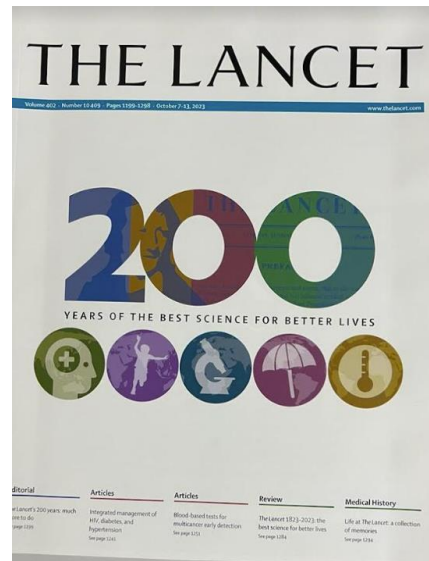
### BMJ Open Integrating health services for HIV infection, diabetes and hypertension in sub-Saharan Africa: a cohort study

Josephine Birungi,<sup>1,2</sup> Sokoine Kivuyo,<sup>3</sup> Anupam Garrib,<sup>4</sup> Levicatus Mugenyi,<sup>2</sup> Gerald Mutungi,<sup>5</sup> Ivan Namakoola,<sup>1</sup> Janneth Mghamba,<sup>6</sup> Kaushik Ramaiya,<sup>7</sup> Duolao Wang,<sup>8,4</sup> Sarah Maongezi,<sup>8</sup> Joshua Musinguzi,<sup>8</sup> Kenneth Mugisha,<sup>2</sup> Bernard M Etukoit,<sup>2</sup> Ayoub Kakande,<sup>1</sup> Louis Wihelmus Niessen,<sup>9</sup> Joseph Okebe,<sup>9</sup> Tinevimbo Shiri,<sup>9</sup> Shimwela Meshack,<sup>10</sup> Janet Lutale,<sup>11</sup> Geoff Gill,<sup>12</sup> Nelson Sewankambo,<sup>13</sup> Peter G Smith,<sup>14</sup> Moffat J Nyirenda,<sup>1,15,16</sup> Sayoki Godfrey Mfinanga,<sup>3,9</sup> Shabbar Jaffar,<sup>9</sup>

### INTEAFRICA Paper citation in the Lancet journal

Kivuyo S, Birungi J, Okebe J, Wang D, Ramaiya K, Ainan S, Tumuhairwe F, Ouma S, Namakoola I, Garrib A, van Widenfelt E, Mutungi G, Jaoude GA, Batura N, Musinguzi J, Ssali MN, Etukoit BM, Mugisha K, Shimwela M, Ubuguyu OS, Makubi A, Jeffery C, Watiti S, Skordis J, Cuevas L, Sewankambo NK, Gill G, Katahoire A, Smith PG, Bachmann M, Lazarus JV, Mfinanga S, Nyirenda MJ, Jaffar S; RESPOND-AFRICA Group. Integrated management of HIV, diabetes, and hypertension in sub-Saharan Africa (INTE-AFRICA): a pragmatic cluster-randomised, controlled trial. *Lancet*. 2023 Oct 7;402(10409):1241-1250. doi: 10.1016/S0140-6736(23)01573-8. PMID: 37805215.

# Media releases for INTE-Africa study



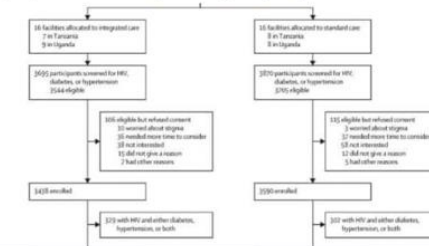
## Additional links/sources:

1. Published in the Lancet 200 years anniversary issue (October 2023)
2. Lancet commentary - [Integrating HIV, hypertension, and diabetes primary care in Africa - The Lancet](#)
3. East African newspaper
4. LinkedIn and other social media platforms
5. La Trobe university media release: <https://www.latrobe.edu.au/news/articles/2023/release/a-cost-saving-option-for-chronic-care-in-africa/>
6. MRC/UVRI & LSHTM website press release: [PRESS RELEASE | LSHTM](#)
7. Medical express: [Integrated chronic care in Africa can improve outcomes and save money \(medicalxpress.com\)](#)

**New posts**

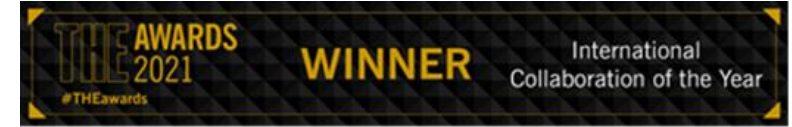
**African Society for Laboratory Medicine (ASLM)**  
8,697 followers  
6h

Check out the article in **The Lancet** on Integrated Mgt of HIV, Diabetes, and Hypertension in Africa (INTE-AFRICA): a pragmatic cluster-randomised, controlled trial. Integrated chronic care services maintains high standards of care for diabetes & hypertension without affecting the outcomes for people with HIV. <https://bit.ly/46lpzvw>



**A cost saving option for chronic care in Africa**

A new study has found significant patient benefits and cost savings when healthcare for people with diabetes and hypertension is delivered alongside HIV care in integrated clinics in Uganda and Tanzania; this is also a possible model for the rest of the African continent.



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Research Partnership for  
the Control of Chronic  
Diseases in Africa

# Thank you for listening

## Acknowledgement

Study participants  
Ministries of Health  
Steering Committee  
Study staff  
All  
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Study PIs



## Principal Investigators of INTE-Africa study



MRC/UVRI and LSHTM Uganda Research Unit

