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The Western Cape Cold Case Consortium (W4C): Improvements for identifying the unidentified

Progress Report December 14,2022

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ABSTRACT

The Western Cape Cold Case Consortium (W4C) is an interdisciplinary team of expert research-practitioners based in academic institutions in the Western Cape, committed to the application of scientific and visual analysis in cases of the unidentified deceased to assist with their identification. Our approach combines innovative multifactorial and interdisciplinary methodologies alongside established techniques that draw on external expertise by design, including osteobiography anthropological assessment, molecular profiling, stable isotope analyses, forensic contextual and case data information (such as unique identifiers and personal belongings) to provide a richer picture and understanding of the person. Facial reconstruction is the key medium of integration of these multifactorial methods to elicit memory and identification via public appeals for information on unresolved cases. To date we have nearly completed the entire project, and we have achieved the aims as outlined in our project proposal, including additional unanticipated results with significant positive impact on the sector. We established the research team, held meetings to understand the needs of the City of Cape Town, applied and received all the research permissions and ethics. We completed the pilot for all research aims except for craniofacial reconstruction, which are still under development by Dr. Smith and intended completion date is Feb 28, 2023. Regarding identifying gaps in communication and barriers to identification in the sector, we held several meetings with the CCT mortuary services, the Provincial Forensic Pathology Services and the WC detectives in SAPS responsible for identification of the unidentified, missing and murdered. Through these experiences we better understood some of the local challenges. W4C/FPS/CCT collaborated on a 3-day intensive training in post-mortem fingerprinting (basic and advanced) and post-mortem facial photography to 30 local undertakers and approx. 70 forensic pathology officers and facility managers across WC province, this received some additional support by the International Commission of the Red Cross. We identified the need for a DNA standard operating procedure before maceration to ensure good DNA recovery, which is being created. We held a solution-based stakeholder meeting to identify and improve gaps in communication and data sharing, and thus, establish procedures to improve identification. We recognised through these engagements a serious barrier in the SAPS 55a missing persons form and how it speaks to SAPS 55b death registry form. Dr Smith and A/Prof Gibbon have workshopped the form and have been working with the SAPS national detectives to update the 55a form, the revised version has gone out to the 9 provinces for comment before implementation.

INTRODUCTION

The City of Cape Town has the highest caseload in the Western Cape province, with 3500-4000 cases of unnatural death admitted annually to the Salt River Mortuary, 9% (320 individuals) of whom remain unidentified (Reid et al. 2019;2020). Forensic identification by visual recognition by next of kin is the most common form of identification, however, this is not possible when the body is decomposed, skeletonised, or burnt. Successful identification of these persons, however, is a priority to increase social-criminal justice; aid the prosecution of wrongful death; and to restore the dignity of those who might otherwise have died in obscurity (Baliso et al. 2019). However, scientific methods of identification are unfortunately not used consistently in all cases, and when used, are often used in isolation from other methods. There is little communication and feedback from SAPS to role-players, and despite these attempts, many individuals unfortunately remain unidentified.

There is no consolidated national or provincial database of missing persons and unidentified deceased cases which may be easily compared. Additionally, significant obstacles exist in the existing partnerships, protocols and access to expertise which may improve service delivery in this area. These complexities need to be understood and we seek to assist where possible to suggest improvements.

The Western Cape Cold Case Consortium (W4C) is an interdisciplinary team of expert research-practitioners based in academic institutions in the Western Cape, committed to the application of scientific and visual analysis in cases of the unidentified deceased to assist with their identification.

Our approach combines innovative multifactorial and interdisciplinary methodologies alongside established techniques that draw on external expertise by design, including osteobiography anthropological assessment, molecular profiling, stable isotope analyses, forensic contextual and case data information (such as unique identifiers and personal belongings) to provide a richer picture and understanding of the person. Facial reconstruction is the key medium of integration of these multifactorial methods to elicit memory and identification via public appeals for information on unresolved cases. We commit ourselves to a pracademic exchange between public sector service providers and citizen allies, including industry, the general public and netizen (online) communities. Values we hope to foster include encouraging more open lines of communication between diverse stakeholders (*i.e.* pracademic exchange) including the families of the missing and unidentified deceased, and greater public awareness and access to information for those affected by such cases. W4C has grown out of mutual recognition of complementary skills, and a shared commitment to

advancing science and is informed by forensic humanitarian values. A community-focused, participatory science with the potential and commitment to expand this approach into forensic service.

Research aim and objectives:

This community partnership seeks to directly assist the Western Cape Province and City of Cape Town with the burden of unidentified persons, through an innovative interdisciplinary partnership between local academic institutions and the Department of Health in the sector of Forensic Pathology. The aim is through a pilot study to identify and address gaps in the identification workflow for forensic identification.

The study will be divided into two phases. We have received approval for Phase 1 and completed these objectives with the exclusion of the final facial reconstructions (these will be completed early in 2023 and we will shift into phase 2), Phase 2 is still under development and is being informed by the outcomes of phase 1.

PHASE I:

Objective 1. Officially establish W4C Consortium. Apply for ethics, permissions, materials transfer agreement to begin study.

Objective 2. Identify gaps and areas of improved communication between stakeholders, methods and reporting. Create documents, policies, training and development to address gaps.

Objective 3. Pilot the generation of facial images and contexts using multifactorial analyses from five unidentified cases.

- Forensic records review to identify five cases from Salt River Mortuary.
- Conduct multifactorial scientific analyses and generate case context on each case.
- Create facial reconstruction and depiction of the five cases.
- Establish a plan and protocol with relevant stakeholders for dissemination of the generated facial depictions

PHASE 2:

Objective 4. Display facial images in the media for public engagement and identification of deceased.

- Launch pilot public appeals website with NGO/charity and media partners.

- Engagement with public who may recognise faces.
- Confirm the kinship using scientific methods of testing (e.g. conventional DNA profiling)

PROJECT PROGRESS AND FINDINGS TO DATE

Objective 1 was achieved the W4C was formally established. Ethics has been approved at the University of Cape Town (UCT) (HREC# 692/2021) and has also been received by Stellenbosch (SUN). A materials transfer agreement between UCT and SUN was signed and implemented. The W4C was also formally registered on the [Stellenbosch University Social Impact Knowledge Database](#), which makes it eligible to receive institutional funding for future phases.

There were challenges, with initial delays within UCT to open an MTA and approvals with the budget that resulted in 2 months lost to the project. The complexities of the partnership and identifying how we can support the CCT within the limitations of one year and the proposed study objectives. It took time to establish this partnership and the number of stakeholders made preparing the ethics application challenging and took longer than anticipated to get all inputs and submission. Without the ethics we were unable to begin our work. There were additional challenges raised around this with the facial reconstructions, as there was a plan for verification of the results by an external laboratory in the UK. This was not possible due to lack of clarity on the policies and procedures around sending these data on active criminal investigations to a third international party. This gap will require further research to address. It caused further delays in the completion of the facial reconstructions.

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Objective 2 (See Appendix B) we had several meetings with the City of Cape Town stakeholders to understand to identify gaps and have already begun to help them with solutions for some of the concerns raised. The creation of the content for these training sessions in the form of lecture slides and the training seminars directly replaced the need for the creation of an SOP. These slides were shared with all participants and digitally sent to our CCT Partner Susan Brice. We brought together FPS representatives from Gauteng and Western Cape around the same table for the first time since the service was founded in 2006. We have partnered with National SAPS detectives to update and improve the SAPS 55a missing persons form, which is currently out for comment to the 9 provinces.

- Through Prof Martin there was a facilitation of medical professional to sign off on death certificates for the city-contracted undertaking service the M mortuary. This allows for the body to be released for burial.
- One major challenge raised was death photography a training session was held at the local M-mortuary in the City of Cape Town by Dr. Smith with some students on January 28, 2022. Facial photographs of the deceased at the time of admittance, under controlled conditions and following international guidelines, can assist greatly down the road with identification.
- May 21, 2022: ASSA Forensic Anthropology Interest Group (FAIG) symposium entitled “Post-mortem Forensic identification: identifying challenges, solutions and innovations” (See **Appendix A**).
- July 11, 2022: we met with FPS/CCT/W4C and had a knowledge exchange/workshop planning meeting at the Observatory Forensic Pathology Institute (OFPI).
- July 12 and July 13, 2022: A/Prof Gibbon and Dr. Smith with their students in partnership with FPS ran a 2-day training session for post-mortem digital fingerprinting and post-mortem photography. We trained 60 mortuary personnel from the Cape Town M mortuary, the Funeral Directors Forum and UCT anatomy technicians, as well as forensic officers from FPS. (See **Appendix A**.)
- July 14, 2022: we went for post workshop debrief with Susan Brice of CCT, W4C and FPS to discuss the successes of the training and continued challenges.

- July 14, 2022: A/Prof Gibbon and Dr Smith were invited to meet with the SAPS missing persons unit and FPS in their monthly meeting. Wherein we introduced W4C as an entity and discussed some of the challenges that had been raised during our engagements. Through this engagement we realised there was still some work to do regarding Phase 2 and the dissemination of the results of the pilot to the public. These will be resolved in 2023.
- July 15, 2022: Dr Smith facilitated an additional training session at the FPS Worcester unit on digital finger printing and post-mortem photography.
- A/Prof Gibbon initiated communications with SAPS National Detective Unit to discuss 55a Missing Persons form, she and Dr Smith met with them on September 19, 2022 and started meaningful engagement on the form. We co-constructed a comprehensive, consultation-led set of revisions to SAPS 55a form (Reporting a Missing Person) to make this more accessible, user-friendly, and reflective of human diversity, including the revision of standard body segmentation diagrams to reflect a more generic human body form. The form has been updated and improved in how it speaks to the 55b death registry form, and we hope will enable better chances for identification. There are several stem-off projects from this, one is to partner with a colleague at UCT to turn this form into a private app for SAPS, enabling data capture in real-time on a simple cell phone device. Additionally, Dr Smith has been consulted to assist with the design of a new Captain Crime Stop character and superhero outfit for children's outreach.

Objective 3: The 5 cases for the pilot were identified and the five cold cases from the province were identified for the pilot. Due to the sensitivity of these being open criminal investigations we are currently unable to share the specific results. However, forensic pathological and osteobiographic analyses, forensic genetics, stable isotopes were applied to all 5 cases. A 3D digital rendering was achieved for the crania in all 5 cases using either Medical CT or 3D surface scanning. The facial reconstruction processes are underway, the craniofacial analyses are complete, pegs sets have been placed or identified for all cases, and the reconstructions are in process.

PHASE 2: 2023

Objective 4:

- March and April will be focused on permission and an SOP for delivery of final results.
- June and July will be roll out of the final images to the media for identification.
- This section should outline the activities still to be completed and provide a timeline for these. Once again, please refer to the original proposal submitted.

CHALLENGES

Conducting the pilot study, we experienced several challenges some we have overcome, and others are more complex and require further engagement:

1. The length of time it took to establish the relevant permissions and ethics to begin the process.
2. The length of time it took to obtain access to the budget.
3. Discussions around data storage and sharing information between members of the collaborating institutions, FPS and SAPS.
4. Validation of results of the facial reconstruction by an external laboratory.
5. Dissemination of experimental data not currently recognised in a court of law i.e. novel research data.
6. Dissemination and mode of delivery for final facial reconstructions to the public and within SAPS.
7. Results communications to and from SAPS and route to positive identification.

BUDGET

			UCT	SUN	Total
Item	Unit cost	# of units	ZAR	ZAR	ZAR
Stipends	Varied	5	R 16 135.40	R 10 245.59	R 26 380.99
DNA analysis	Ran multiple samples in trouble shooting		R 42 779.17 R 29 180.24	R -	R 71 959.41
Travel	N/A	1	-	R7 919.85	R 7 919.85
Lab Supplies for workshops	N/A	1	-	R1 027.32	R 1 027.32
Body diagram production	SAPS 55a	1	-	R2 291.00	R 2 291.00
Refreshments for training	N/A	1	R 2 085.43		R 2 085.43
Total			R 90 180.24	R 21 483.76	R 111 664

Modifications to the budget: 3D printing was deemed unnecessary and removed from costs, CT was covered through other funds, repurposed budget to outreach objectives of bringing in an expert from Johannesburg for training CCT and FPS staff locally, we involved several students in these processes providing a total of 5 student development stipends for work on the objectives of this project. The remaining budget went towards the DNA prep kit as challenges led to many samples being taken and different processes applied to improve yields; one kit cost R300 000 and we contributed excess towards this as it was an additional unexpected challenge to the study.

CONCLUSIONS AND RECOMMENDATIONS FOR FOLLOW-UP ACTION

Findings during this project required a deviation from the activities and timelines described in the original grant application.

Partner and stakeholder conversations (CCT and M Mortuary; FPS Salt River/OPFI) revealed ground-up issues regarding basic service provision that we provide immediate assistance with, thus alleviating some fundamental challenges with basic service provision e.g.

- identifying a medical officer to sign off on death certificates at the city-contracted undertaking service M Mortuary.
- offering fingerprinting and PM facial photography training for both undertakers and forensic officers.
- initiating and participating in critical liaison meetings to foster better communication between key stakeholders (CCT, FPS and SAPS).

This process could be summarised by the phrase ‘stark realisations, ground-up interventions.

City partners revealed a post-mortem population we were unaware of when only approaching the problem of the unidentified deceased through a forensic lens. Undertakers do not have the support of SAPS with identification methods. Outside of applying cutting-edge scientific methods, we found that basic procedures and ‘minimum effort’ tasks are not always carried out by those responsible. The problem of post-mortem identification is not exclusive to non-natural deaths

Pracademic mediation/facilitation has offered a way around and through dead-end politics and bureaucratic red-tape by recognising mutual interests across feuding services, and the science/tech which can improve service delivery.

There is an urgent need to continue to create knowledge exchange opportunities, to inform future training needs & applied research without ‘top-down’ assumptions or knowledge gatekeeping, ways to foster exchange and support between metropole and rural services.

The M Mortuary (or whichever service wins future city contracts) must be equipped with a digital fingerprinting device. A/Prof Gibbon is working with ICRC to support this expense and establish the setup. This will be picked up in January.

IN SUM:

1. Every case entering the M mortuary should have fingerprints taken and immediately have a standardized postmortem facial photograph taken in good quality resolution, as both will assist with future identifications. CCT should facilitate continued partnership with A.Prof Gibbon and Dr. Smith to support this training.
2. Establish and implement a DNA protocol within FPS for pre-maceration DNA extraction.
3. It cannot be assumed SAPS is covering their mandate and FPS and city mortuaries need to protect themselves.
4. National SAPS forms for reporting missing persons and unidentified deceased persons needed an update.
5. Improve communications among provincial stakeholders CCT and FPS.
6. Study revealed gaps in local SAPS procedures contributing to lack of information for unidentified cases.

Appendix A: Training and Knowledge Exchange

ASSA 2022 Forensic Anthropology Interest Group (FAIG) symposium, 21 May 2022

For this year's ASSA conference, the Forensic Anthropology Interest Group (FAIG) session was convened by A/Prof Victoria Gibbon (University of Cape Town) and Dr Kathryn Smith (Stellenbosch University), who are currently collaborating on a pilot research project called Western Cape Cold Case Consortium (W4C) based on multi-factorial analysis for postmortem forensic identification, in collaboration with the City of Cape Town and the Cape Higher Education Consortium (CHEC). The FAIG 2022 session was entitled "Post-mortem Forensic identification: identifying challenges, solutions and innovations".

Grounded by recent research in this field, this session aimed to engage stakeholders at all levels of this work in the interests of fostering positive academic exchange to strengthen both science and service delivery through innovative solutions. Prior to the event, FAIG members and invited stakeholders were surveyed to identify key challenges experienced in postmortem forensic identification. Responses enabled the formulation of three key topics, namely Day to Day Collaboration and Cooperation; The Need For A Centralized Identification Database – But How?; and Harnessing New Technologies and Methods in Low Resourced Contexts.

The objective was to gather solution-minded approaches using a breakout group method, with each group comprising academic researchers, practitioners, service providers and postgraduate students of varying levels of experience and seniority from the fields of forensic anthropology and pathology, forensic sciences, forensic facial imaging, Forensic Pathology services, the South African Police Service's Victim Identification Centre, the International Commission for the Red Cross and others.

The breakout rooms method was effective, creating space for frank and robust conversation within smaller groups and across disciplines and work contexts. After each breakout sessions, spokespersons for each group then brought back overall comments to a broader discussion.

The responses from the engagement are enlightening, evidencing common experiences and challenges nationally, and offering ground-up solutions to some of the most persistent issues for practitioners in the forensic identification space across academia as well as within local and national authorities. The most pressing need which emerged is for more opportunities such as this, where conversation across siloed work contexts was enabled and facilitated. Time permitting, we aim to produce the responses into some form of

output. Thank you to ASSA for providing the platform, and for all the participants for such a wonderful enriching experience.

[submitted to ASSA newsletter, Nov 2022]

Improving Post-Mortem Identification in Cape Town and the Western Cape, 12-13 July, 2022

The Western Cape Cold Case Consortium (W4C) are a group of academics representing various fields of expertise in forensic postmortem identification (forensic anthropology, pathology and genetics, stable isotope analysis and forensic facial imaging) who have come together with the common goal to improve identification of the deceased in the province. We are in the process of concluding a pilot project involving a collaboration between researchers and practitioners at the University of Cape Town and Stellenbosch University focusing on five complex identification cases in the context of identification procedures and workflows. One aspect of our focus is to identify challenges hindering identification from the ground up.

Two critical themes emerged from grounded research and conversations with service providers: the quality of postmortem facial photography is very poor, and fingerprinting skills are inconsistent, especially on compromised tissues. Another aspect which emerged from discussions with city partners and forensic services was the lack of support for the identification of unknown decedents who do not enter the Forensic Pathology Services system, but instead become the responsibility of the city's undertaking service who is contracted to conduct indigent pauper burials.

In response, Dr. Kathryn Smith (Stellenbosch University) and A/Prof Victoria Gibbon (University of Cape Town) of W4C initiated a comprehensive training and knowledge-sharing session for forensic officers and undertakers in the Western Cape Province over 12 and 13 July, 2022, hosted at UCT and reaching over 60 service providers. This was done in partnership with the CHEC-City of Cape Town Regional Development Fund and Forensic Pathology Services Western Cape & Gauteng with sponsorship from the International Commission from the Red Cross.

The programme was facilitated by expert forensic practitioners working across FPS including Wilhelm Fouche (FPS Gauteng) and Rudolph van der Berg (FPS Western Cape) who facilitated basic and advanced fingerprinting training, and Dr Kathryn Smith and Pearl Mamathuba (VIZ.Lab, Stellenbosch University) provided training in postmortem facial photography in the context of the underutilisation of forensic facial imaging methods (facial reconstruction and photo enhancement) for identification in complex cases.

We took a holistic approach to post-mortem identification in the context of current South African legislation and local innovation, and focused on an integrated understanding of the role of fingerprinting and photography as complementary biometric and visual identification methods. Theory & discussion sessions each morning were paired with hands-practical training each afternoon, and concluding with a reflection session and lucky draw sponsored by Forensic Tools.

Participant feedback revealed the enormous interest in, and pressing need for, similar knowledge-sharing and networking sessions like this in future. As with the FAIG workshop, participants were especially appreciative of the space to openly discuss practical challenges and propose solutions. The sessions also created awareness of expertise and consultation available to city service providers and provincial and national authorities within academic contexts to assist them in their work.

[submitted to ASSA newsletter, Nov 2022]

Appendix B: Stakeholder meetings and workshops

August 23, 2021 Teams	Initial W4C meeting	Profs Judy Sealy and Lorna Martin, A/Prof Victoria Gibbon, Drs Kathryn Smith and Laura Heathfield
September 3, 2021 Teams	Initial meeting with W4C and CCT partners	W4C: Prof Lorna Martin, A/Prof Victoria Gibbon, Dr. Kathryn Smith. CCT: Ms Arlene Hangone, Mr. Ashraf Jabaar, Ms. Susan Brice and Mr. Nazeem Adams.
October 8, 2021 Teams	W4C and Susan Brice	W4C: Prof Lorna Martin, A/Prof Victoria Gibbon, Dr.Laura Heathfield. CCT: Ms. Susan Brice.
28 January 2022, M Mortuary	M Mortuary visit	Dr Kathryn Smith Pearl Mamathuba Arlene and Angelo Hangone (owners) Dr Linda Aldum Susan Brice (CCT) M staff (Nicole, Wilmien, Thembi, Magda)
May 21, 2022 Teams	ASSA 2022 Forensic Anthropology Interest Group (FAIG) symposium	Diverse national stakeholders in forensic identification across South Africa, inclusive of academics, FPS, ICRC
2 July 2022, Teams	Scientific team bio-data sharing	Profs Victoria Gibbon, Judy Sealy Drs Laura Heathfield, Kathryn Smith, Mandy Date-Chong
11 July 2022	FPS/CCT/W4C knowledge exchange/workshop planning, OFPI	Present: FPS WC: Kevin Jones, Wayne Mitten, Carl Gordon, Rudolph van der Berg FPS Gauteng: Wilhelm Fouché W4C: Kathryn Smith CCT: Susan Brice Online: Vonita Thompson, Prof Victoria Gibbon (W4C)
12 July 2022	FPS/CCT/W4C training	27 service providers (Cape Town, Funeral Director's Forum; UCT anatomy technicians)
13 July 2022	FPS/CCT/W4C training	32 Forensic Officers from FPS Salt River Mortuary/OFPI
14 July 2022	FPS/CCT/W4C post-workshop debrief, OFPI	Present: FPS WC: Kevin Jones, Wayne Mitten, Carl Gordon, Rudolph van der Berg FPS Gauteng: Wilhelm Fouché W4C: Dr Kathryn Smith, Prof Victoria Gibbon CCT: Susan Brice
14 July 2022, OFPI	SAPS-FPS monthly meeting	Present: FPS WC: Kevin Jones, Wayne Mitten, Carl Gordon, Rudolph van der Berg SAPS: Col. Van Wyk (SRM liaison); Col. Philander (Tygerberg liaison); Brig. Monk-Jonker, Capt. Teunis Briers (VIC); Sgt Yolandi van der Merwe (WC Missing Persons Bureau); LCRC rep [poss. Col. Kok?] Observers: Wilhelm Fouché (FPS Gauteng), Dr Kathryn Smith (W4C)
14 July 2022, OFPI	SAPS-W4C introduction	Present: FPS WC: Kevin Jones, Wayne Mitten, Carl Gordon, Rudolph van der Berg SAPS: Col. Van Wyk; Brig. Monk-Jonker, Capt. Teunis Briers (VIC); Sgt Yolandi van der Merwe (WC Missing Persons Bureau); Wilhelm Fouché (FPS Gauteng), Dr Kathryn Smith (W4C), Prof Victoria Gibbon (W4C)
15 July 2022, Worcester	Fingerprinting and Facial Photo training at FPS Worcester	UCT workshop content take on the road by FPOs Willie Fouche and Rudolph van der Berg; an additional 30+ FPOs reached in real-life scenario
19 September 2022, Teams	SAPS national Division Detective and Forensic Services, Teams	Present: Dr Kathryn Smith and Prof Victoria Gibbon (W4C); Brig. Attie Lamprecht, Col. Naas Rossouw